IPP
VOLUME II
LYNNDYL
ALTERNATIVE SITE

DRAFT ENVIRONMENTAL STATEMENT
INTERMOUNTAIN POWER PROJECT
US Department of the Interior
Bureau of Land Management

INTERMOUNTAIN POWER PROJECT

DRAFT ENVIRONMENTAL STATEMENT

VOLUME II LYNNDYL ALTERNATIVE SITE

Prepared By:
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VOLUME II
LYNNDYL ALTERNATIVE SITE
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CHAPTER 8
ALTERNATIVES TO PROPOSED ACTION

A. INTRODUCTION

Several locations in eastern Wayne and Garfield counties, Utah were investigated by project proponents before the Salt Wash site was selected as the preferred one. Siting criteria included several factors, e.g., availability of coal and water, also environmental concerns.

In July, 1974, preliminary engineering and feasibility studies were initiated by proponents of IPP with the Los Angeles Department of Water and Power, one of the project participants, designated to conduct the studies. Among the various studies undertaken were those concerned with air pollution potentials. The Westinghouse Environmental Systems Department, consultants to IPP, predicted that sulfur dioxide standards (PSDR, Class 1) would be violated inside Capitol Reef National Park (WESD, 1977).

Early in 1977, the Bureau of Land Management, through its consultant, H.E. Cramer Company, began the analysis of projected air quality impacts of sulfur dioxide, nitrogen dioxide, and particulate emissions at the proposed Salt Wash Generating station and six alternative sites (Desert, Hanksville, Green River, Woodside, Beckwith, and Lynndyl). Cramer's studies also predicted that the Class I air quality standards for sulfur dioxide would be violated in Capitol Reef National Park if the power generating station were constructed at Salt Wash (H.E. Cramer, 1978).

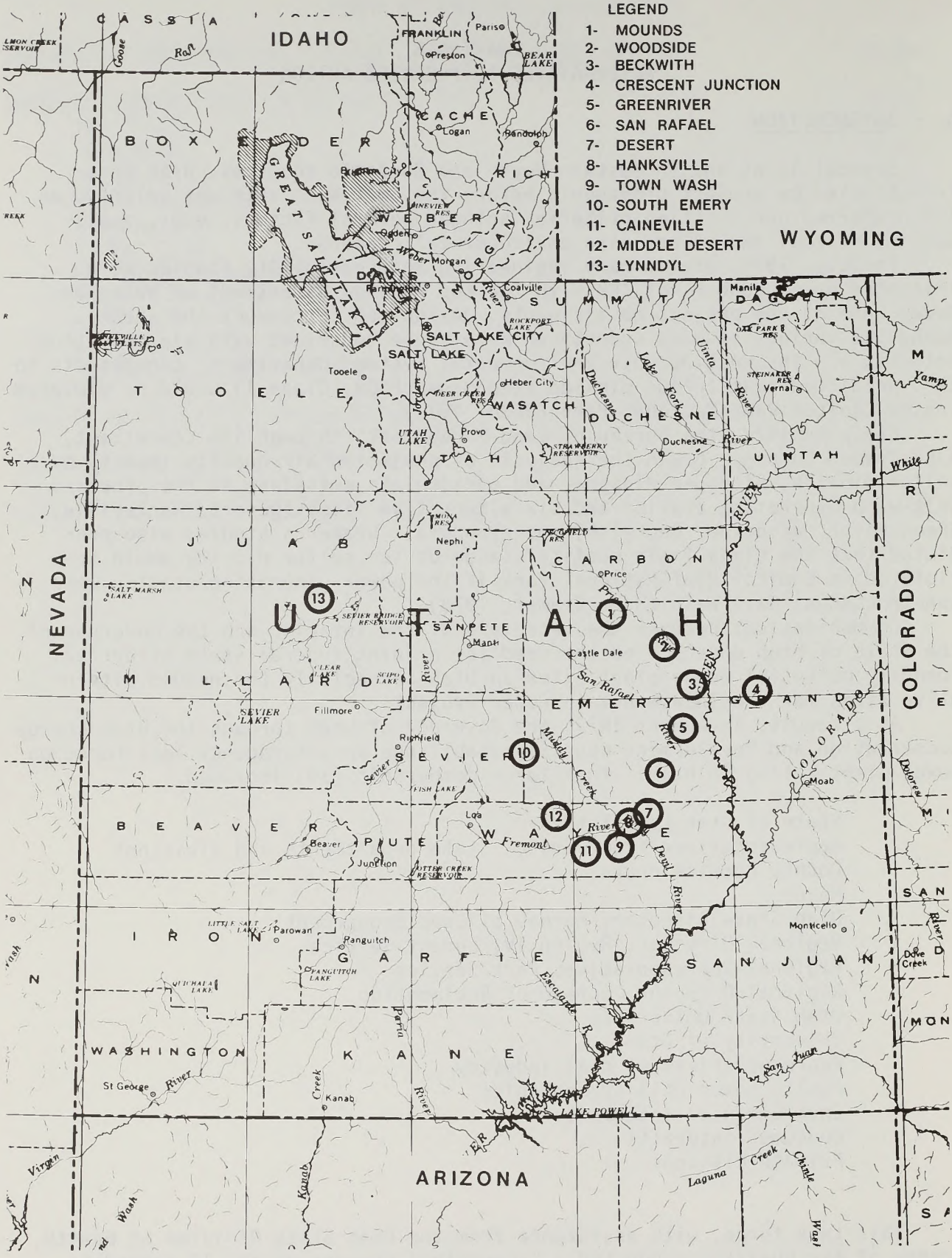
Communications between the Secretary of the Interior and the Governor of the State of Utah underscored the need for a joint federal state effort to identify potential power plant sites in Utah, especially the needed alternative sites for the Intermountain Power Project.

As a result, in August 1977, the Governor of Utah through the Utah Energy Conservation and Development Council established an Interagency Task Force on power plant siting in Utah. Task force membership (30) included:

State of Utah Legislators
Representatives from various state departments and divisions
County commissioners
Mayors
Utah State Director, Bureau of Land Management
Regional Director, Region IV, Forest Service
Regional Representative, Park Service
Regional Director, Bureau of Reclamation
Utah State University
University of Utah
Representatives of coal industry
Public power utility companies
Environmental interests
Consumer interests
Private citizens

This task force, with assistance from the Utah State Division of Health, Bureau of Air Quality, conducted a "screening" process on the 13 candidate sites shown on Figure 8.1-1.

The screening studies projected sulfur dioxide (SO_2) emissions which would likely affect existing Class I air quality areas--Capitol Reef National



CANDIDATE STUDY SITE LOCATION

FIGURE 8.1-1

Park, Arches National Park, and Canyonlands National Park. Table 8.1-1 lists the percentage of time during which violation of Class I increments could occur as a result of power plants located at the candidate study sites.

Because seven of the sites would have required a variance in Class I increments more than 5 percent of the year, the Interagency Task Force focused further studies on the six alternative sites requiring a 5 percent or smaller variance. These studies included socioeconomics, water, ecological factors, land use compatibility, construction and operational costs, and conflicts with other air space uses. Air quality considerations, however, were given greatest emphasis by the Interagency Task Force. Intensive studies by H. E. Cramer Co. estimated sulfur dioxide, particulates, and nitrogen oxide concentrations which could have resulted from each of the six candidate sites. Appendix VIII.1-1 summarizes the findings for five of these six alternative sites. The sixth site is the Lynndyl site.

Based on the various studies, the Interagency Task Force recommended that the Lynndyl and Hanksville sites be considered as alternatives to the Salt Wash site. Air quality studies, however, projected that the Hanksville site would require a variance to meet three-hour Class I SO_2 increments at Capitol Reef National Park (Bowers, et. al., 1978). The Lynndyl alternative site showed no Class I increment violations.

In a letter, dated April 4, 1978, to Cecil D. Andrus, Secretary, Department of the Interior, the participants in IPP stated that it was their intention to study the Lynndyl alternative site while they continued to propose the Salt Wash site. No further engineering-feasibility studies were undertaken by IPP on the Mounds, Beckwith, Desert, Hanksville, or Green River sites.

Preliminary engineering and feasibility studies for the Lynndyl site were prepared by the applicant and received in the BLM Richfield District Office on August 7, 1978. An application for the purchase of power plant site, and rights-of-way for transmission routes, a spur railroad, communication sites, and water conveyance system route were submitted to the Utah State Director, Bureau of Land Management on March 1, 1979.

B. DESCRIPTION OF LYNNDYL ALTERNATIVE

1. General Description

A 3,000 megawatt coal-fired steam generating station would be constructed at the Lynndyl site, about 90 miles southwest of Salt Lake City, Utah. The site location is shown on Figure 8.1-2. Basic plant design would be similar to that described for the Salt Wash site.

Arrangement of facilities on the 4,640 acre site are shown on Figure 8.1-3. A spur railroad for coal delivery, water conveyance system, and borrow materials areas are shown on Figure 8.1-4. The power transmission systems are shown on Figure 8.1-5.

Tables 8.1-2 and 8.1-3 summarize the approximate magnitude of IPP's land and material needs for the Lynndyl alternative. Material and land needs for the Lynndyl and Salt Wash sites differ because of differences in length of transmission systems, access roads, etc.

2. Raw Materials

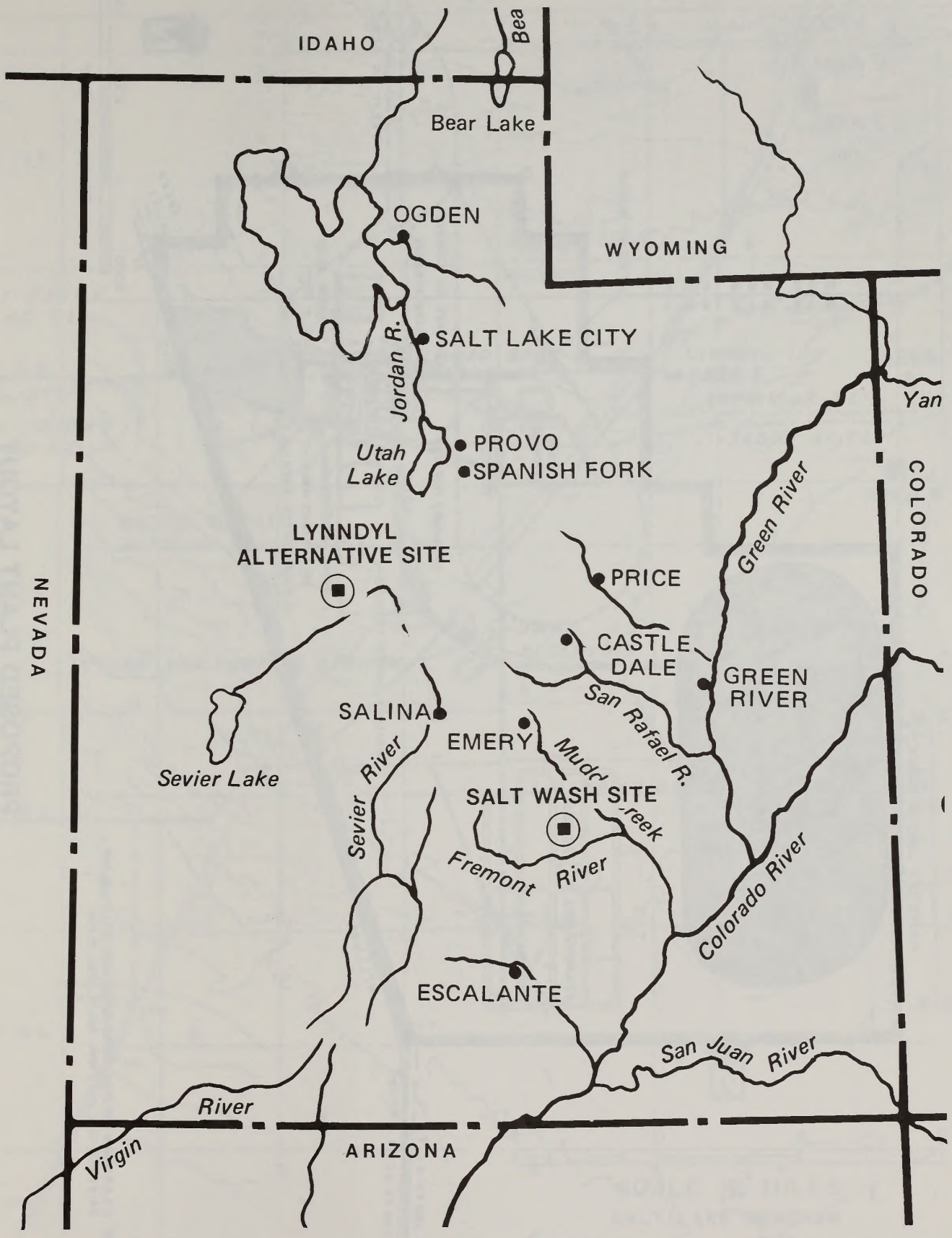
The proponents of IPP have identified raw materials needed to operate the project at the Lynndyl site. Materials include coal, water, lime, and borrow material (sand, crushed rock, and gravel).

TABLE 8.1-1

Percentage of Time During Which Class I
Standards Would Be Exceeded Due to a 3,000 MW Plant

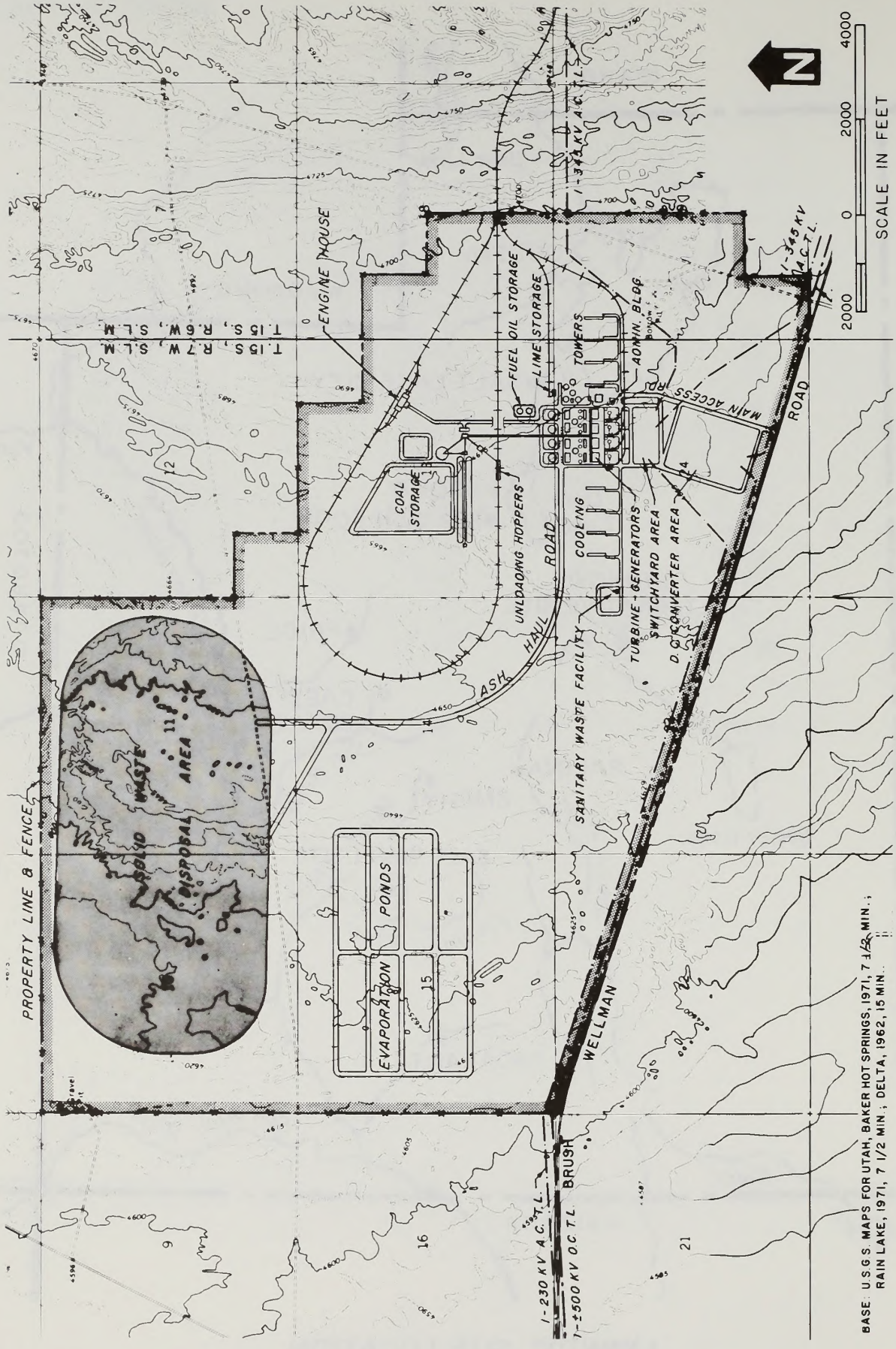
Site	Class I Areas	
	Capitol Reef National Park	Canyonlands National Park
Salt Wash	5.7%	None
Desert	None	1.9%
Hanksville	3.9%	2.1%
Green River	None	2.5%
Woodside	Class II Standard Violation	
Mounds	No Violations--Class I or II	
Beckwith	Class II Standard Violation	
Cresent Junction	None	8.7%
South Emery	5.7%	None
Caineville	19.7%	None
Town Wash	7.6%	2.25%
Middle Desert	21.3%	None
Lynndyl	No Violations--Class I or II	
San Rafael	6.8%	1.25%

Source: Report of Utah State Division of Health, Bureau of Air Quality, 9-20-77.



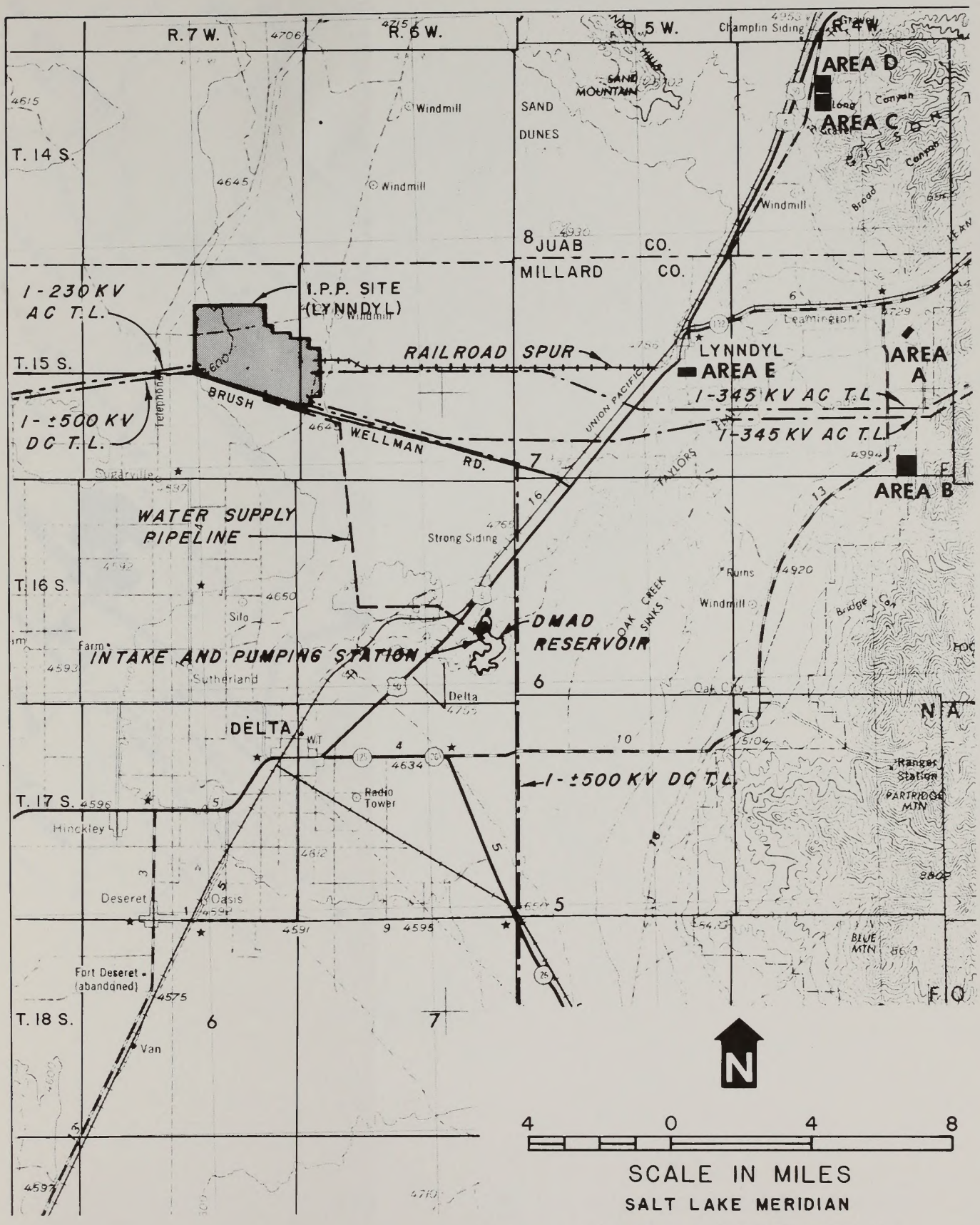
LYNNDYL SITE LOCATION

FIGURE 8.1-2



PROPOSED PLANT LAYOUT

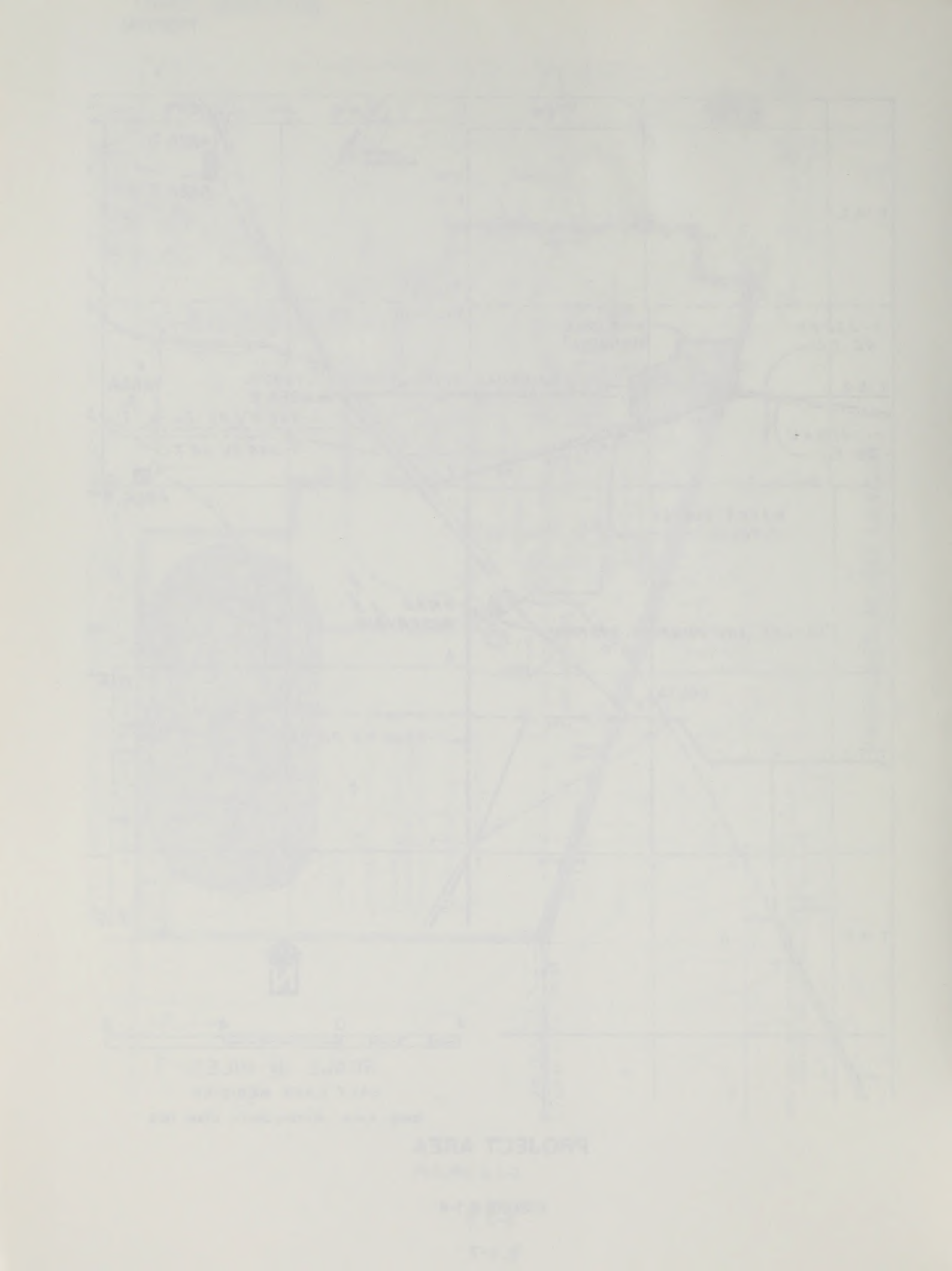
FIGURE 8.1-3



BASE: A.M.S. - NJ-12-1, DELTA, UTAH, 1972

PROJECT AREA

FIGURE 8.1-4



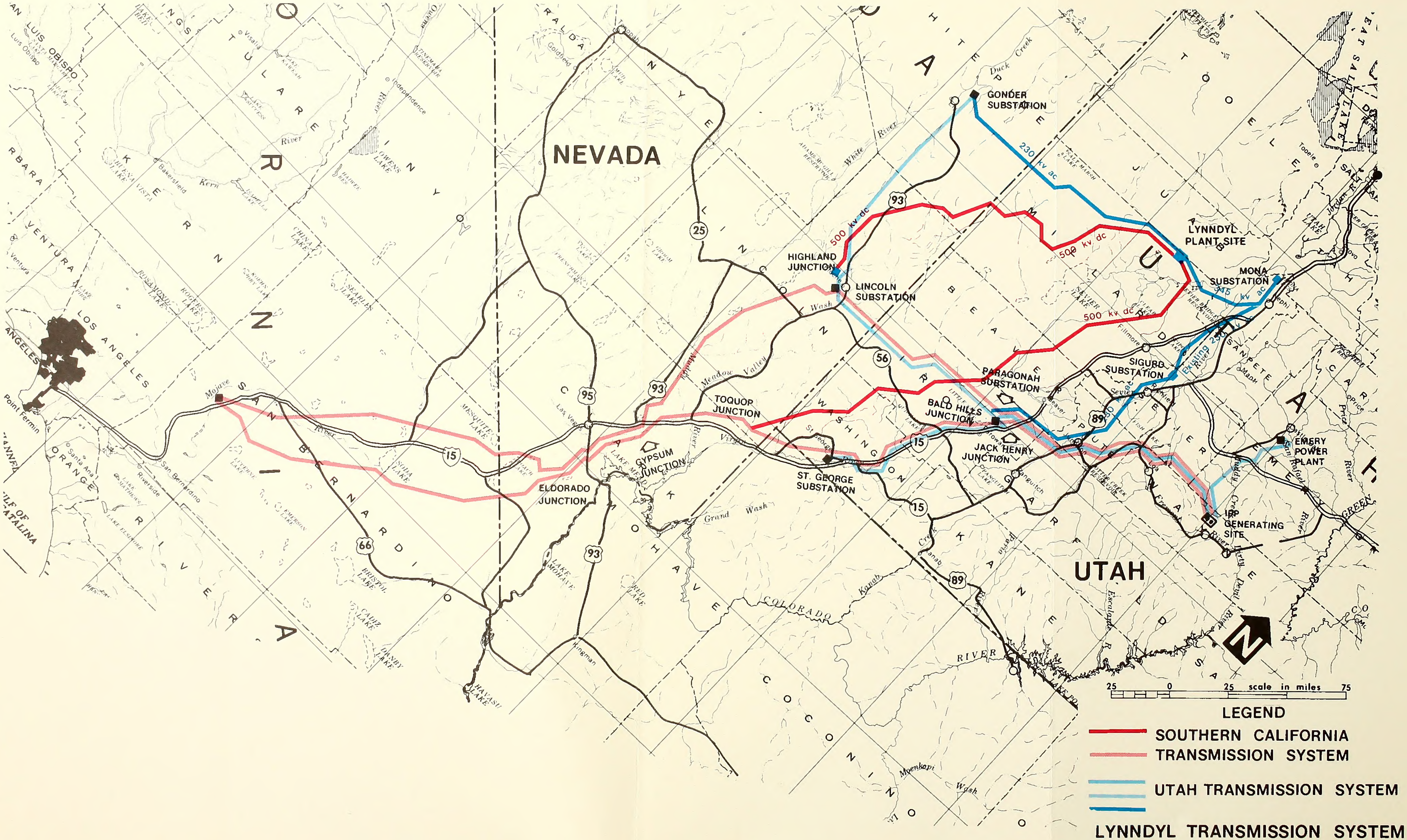

NEVADA
UTAH
GONDER SUBSTATION
230 kv ac
500 kv dc
LYNNDYL PLANT SITE
MONA SUBSTATION
345 kv ac
HIGHLAND JUNCTION
LINCOLN SUBSTATION
PARAGONAH SUBSTATION
SIGURD SUBSTATION
TOQUOP JUNCTION
BALD HILLS JUNCTION
JACK HENRY JUNCTION
GYPSUM JUNCTION
ELDORADO JUNCTION
ST. GEORGE SUBSTATION
EMERY POWER PLANT
IPP GENERATING SITE
25 0 25 scale in miles 75
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
UTAH TRANSMISSION SYSTEM
LYNNDYL TRANSMISSION SYSTEM

Figure 8.1-5

TABLE 8.1-2

Lynndyl Alternative Site Estimated Materials and Lands Required

Material	Approximate Quantities	Use
Borrow Materials		1 generating station
a. Rock Materials	1,200,000 cu. yards	17.3 miles of railroad bed
b. Common Borrow	Within plant site	Dike linings Access roads
Concrete	88,800 cubic yards	Transmission lines (footing bases for towers)
	240,000 cubic yads	Buildings
Asphalt	14,400 cubic yards	9.7 miles of paved plant access, pump station access and ash haul roads.
Lumber	2,940,000 bd. ft.	Railroad ties (60,900) 7 Buildings at generating station
Wood Poles	9,600,000 bd. ft.	6,070 wood poles
Steel towers	35,000 tons	3,960 steel structures
Railroad Steel	14,200 tons	17.3 miles of track
Conductors	4,400 tons (steel) 23,500 tons (aluminum)	1,386 miles of line
Construction Steel	28,000 tons	Buildings at generating station
Lime	3,700,000 tons	Water and air treatment
Coal	296,000,000 tons	Heat source
Water	39,200 acre-feet annually	Primarily for cooling purpose at power generating station
Pipe	23 miles (42" steel pressure pipe)	Water supply system (Additional pipelines would be needed between any wells and discharge points)
Electricity Used in operation	280 MW	For operation of the power generating station

TABLE 8.1-2 (concluded)

Material	Approximate Quantities	Use
Land Disturbed Land Occupied	8,324 acres 2,653 acres	Railroad, generating station, power lines, water pipeline, stub roads, and new access roads.
Diesel Fuel	7,132,000 gallons per year	Operation of railroad unit trains

TABLE 8.1-3

Approximate Acreage Requirements of IPP Facilities

Facility	Total Acreage Disturbed	Acres Occupied for Life of Project	Acres Temporarily Disturbed	Acres R/W Applied For By IPP
Acreage Requirements Within Right-of-Way Applications				
Plant Site	2,170	2,170	0	4,640
Water Conveyance System	114	20	94	120
Well Field (4 wells)	Information Not Available			
Coal Haul Railroad	122	49	73	122
Borrows Areas	200	0	200	600
Southern California Transmission System	4,474 (1,947)[a]	231 (111)	4,243 (1,836)	19,382 (5,297)
Utah Transmission System	510	61	449	5,381
Mona and St. George Substation	45	45	0	45
Highway and Road Access	Included in other totals			
Sub-Total	7,635	2,576	5,059	30,290
Acreage Requirements Outside of Right-of-Way Applications				
Southern California Transmission System				
Access to Power Transmission Corridors	136 (41)[a]	51 (16)	85 (26)	-- --
Project Offices[b]	15 (5)	0 (0)	15 (5)	-- --
Field Offices and Storage Yards[c]	270 (111)[a]	0 (0)	270 (111)	-- --
Concrete Batch Plants[d]	64 (26)	0 (0)	64 (26)	-- --

TABLE 8.1-3 (concluded)

Facility	Total Acreage Disturbed	Acres Occupied for Life of Project	Acres Temporarily Disturbed	Acres R/W Applied For By IPP
Utah Transmission System				
Access to Transmission Corridors	111	26	85	--
Field Offices and Storage Yards[c]	93	0	93	--
Sub-Total	689	77	612	--
Total	8,324	2,653	5,671	30,290

[a]Figures in parenthesis are totals for those segments of the Lynndyl Southern California Transmission System segments that are not in common routes with the Salt Wash System segments.

[b]Three offices of 5 acres each.

[c]Requires 7 acres every 25 miles.

[d]Requires 7 acres every 25 miles on the Southern California System only.

a. Coal Sources

The plant would consume about 7.78 million tons of coal annually--about 296 million tons over the project's life. According to project proponents, firm contracts for a coal supply cannot be signed until an Environmental Impact Report is prepared as required by the California Environmental Quality Act and the proposed action is endorsed by state government officials in California. Coal would most likely be obtained, however, from existing mines or leases in the Central Utah coal fields of Sevier, Emery, and Carbon Counties, Utah. Figure 8.1-6 shows the probable coal sources. Some purchases of coal may be required outside the Central Utah coal fields (due to labor strikes, etc.) during the life of the project.

The projected coal supply would have the following range of properties:

Heating Value Btu/lb Wet	8,930.0	--	12,970
Sulfur Content, Percent	0.3	--	1.0
Ash Content, Percent	4.4	--	13.0
Moisture Content, Percent	4.0	--	15.0

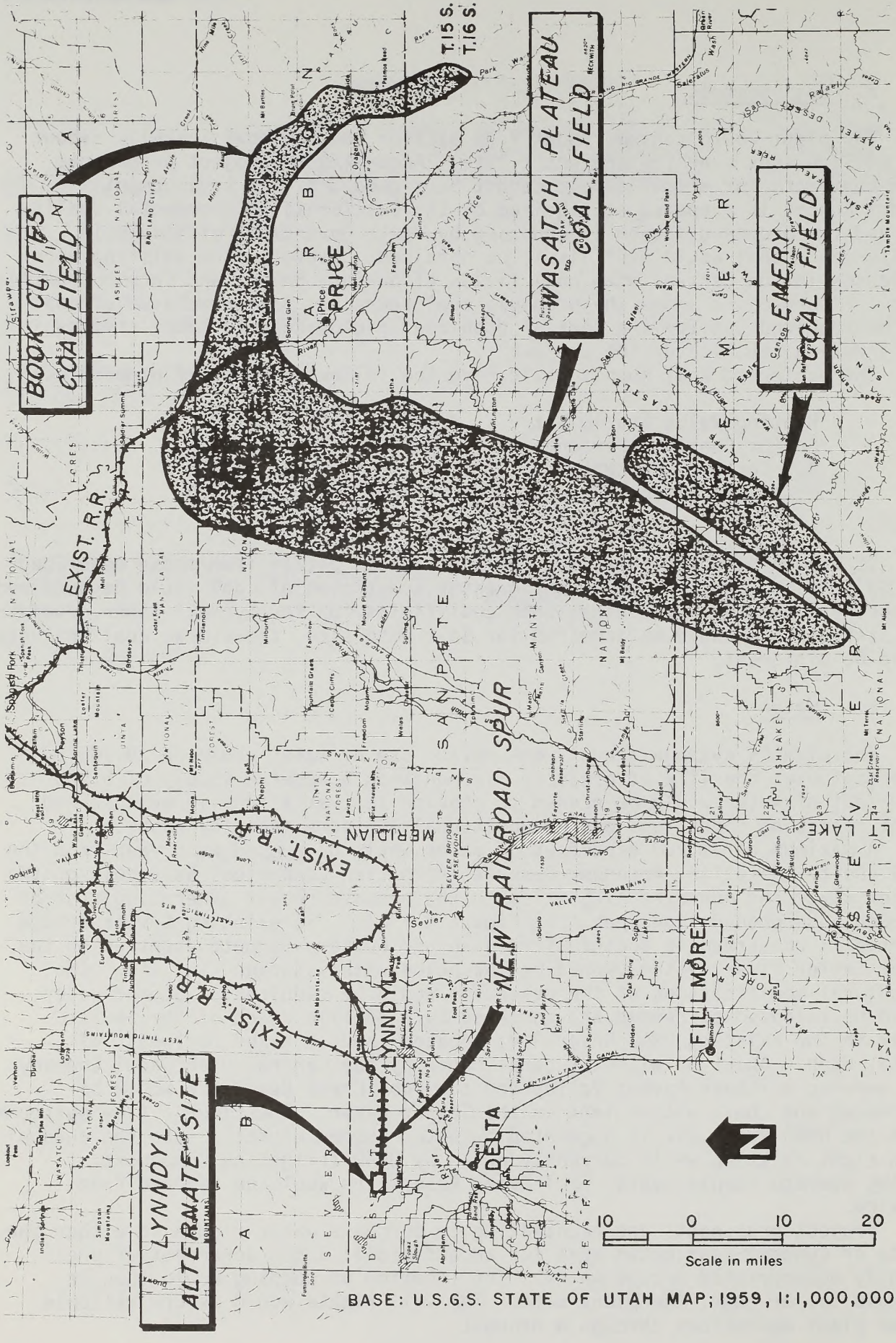
It should be noted that coal characteristics differ from those described for Salt Wash. It is assumed that greater quantities of coal would be acquired in northern portions of Central Utah coal fields for the Lynndyl power generating station than would be acquired for Salt Wash site, therefore, coal analysis could be different.

b. Water

The plant's average annual consumptive use of water would be 39,200 acre-feet over the life of project. In addition a reserve supply of 5,500 acre-feet of water would be needed to provide for variations in weather and plant operating conditions and an additional 300 acre-feet for cushion.

A maximum of 39,200 acre-feet of water would be pumped each year from the DMAD (Delta, Melville, Abraham, Deseret Irrigation Companies) Reservoir on the Sevier River and conveyed 11.5 miles to the proposed power generating station through underground pipelines (see Figure 8.1-4). The existing Sevier Bridge Reservoir, up stream in southeastern Juab and western Sanpete counties on the Lower Sevier River system, would be the prime water storage facility. (No structural modifications of the reservoir would be required.) Stored water would be released as needed and conveyed by a 40-mile reach of the Sevier River to the existing DMAD Reservoir, located about 5 miles northeast of Delta, Utah. About 50 miles of canal owned by the Central Utah Canal Company and serving northern Pavant Valley and the Fool Creek Reservoir would be abandoned and their waters left in the Sevier River. The river's flow upstream from the DMAD Reservoir is augmented by water pumped directly into the channel from eight existing wells currently owned by DMAD Irrigation Companies. During average supply years, Fool Creek Reservoirs would be removed from service.

Project proponents are negotiating to purchase water rights in either the Delta or Lynndyl-Leamington area for an additional 5,500 acre-feet of previously appropriated ground water. The location of pumping would then be changed to, or near, the plant site. The well rights would assure reliable power plant operations through a drought.



PROBABLE COAL SOURCES

FIGURE 8.1-6

No additional water storage facilities would be required except for water tanks at the power generating station for fire protection and emergency water storage.

Negotiations between the irrigation companies and the IPP participants have identified the number of water shares each irrigation company would be willing to transfer and has defined two scenarios for ground water purchase. Table 8.1-4 is a preliminary estimate of the number of water shares that IPP would acquire from the Sevier River System and possible ground water purchase.

The environmental impacts of water being changed from agricultural uses to industrial uses proposed by IPP are discussed in the Land Use section of Chapter 3.

c. Lime

A high calcium, pebble lime would be used to remove sulfur dioxide from flue gasses and for raw water softening. The total requirement during the project's life would be 3.7 million tons based on average grade coal and 75 percent power generating load factor.

Lime would probably be acquired from an outside supplier, Flintkote Company, U.S. Lime Division, about 45 miles west of Salt Lake City near the town of Grantsville, Utah. Lime would be transported by unit trains (22 railroad cars per week) operated by the Western Pacific and interconnecting Union Pacific railroads.

d. Borrow Materials

Earth materials, predominately silty sands, would be obtained from borrow areas within the 4,640 acre plant site for construction of dikes, cover for the synthetic liners in solid waste and evaporation ponds, and for soil cover of the solid waste disposal area.

Construction materials--rock, sand, and gravel--would be needed for concrete and asphalt mixes, road base, and construction of 17.3 miles of spur railroad. Total material needs are about 1.2 million cubic yards.

Project proponents have inventoried five borrow areas within 30 road miles of the power generating station (see Figure 8.1-4). Their capacities are shown on Table 8.1-5. Two of the borrow areas are owned by the State of Utah and the remaining three by private individuals. The estimated available quantities, 5.5 million cubic yards of earth materials, exceed the anticipated need. It is assumed that borrow materials might be obtained from all five areas.

Borrow materials would be hauled by trucks to the various use points.

3. Power Generating Station and Support Facilities

The plant would occupy 4,640 acres of public land currently administered by the Bureau of Land Management. The various project components (generating station, evaporation ponds, solid waste disposal site, coal storage areas, cooling towers, switchyards, and other facilities) would be similar to those proposed for the Salt Wash site.

An aggregate processing plant and concrete mixing unit would be required during construction. A maximum of 1,200 gallons of water per minute would be required to wash the aggregate. Wash water would be conveyed to one of the permanent evaporation ponds which would be constructed early for this purpose.

TABLE 8.1-4

Water Sources
IPP Proposed Shares of Existing Water Companies

Company	Percent IPP Ownership	IPP Shares	Firm Yield Acre-Feet[a]	Average Yield Acre-Feet
Delta[b]	20	5,440	8,160	10,800
Melville[b]	18.6	1,700	4,590	5,300
Abraham[b]	19.2	2,756	4,410	4,700
Deseret[b]	20	7,840	7,840	9,500
Central Utah Canal Co.	85	9,144	14,500	28,400
Total			39,500[c]	58,700

[a]The amount of water that would accrue to rights during the most sustained historical dry cycle and thus assure the project water supply through the projected worst hydrological conditions.

[b]Includes ground water obtained from eight wells owned collectively by DMAD Irrigation Companies.

[c]The remaining water, 5,500 acre-feet, could be obtained through one of two scenarios which were developed in order to assess impacts:

1. 5,500 acre-feet of ground water rights could be purchased by IPP in the DMAD area and those rights transferred to the four IPP proposed wells near or within the plant site.

2. 5,500 acre-feet of ground water rights could be purchased by IPP in the Lynndyl-Leamington area and those rights transferred to the four IPP proposed wells near or within the plant site.

TABLE 8.1-5

Borrow Materials

Area	Control or Ownership	Estimated Available Quantities of Materials (Millions of Cubic Yards) (Rock, Sand, Gravel)	Acres Each Area
A	Private	Greater than 1.0	40
B	Private	1.5-3.0	160
C	State of Utah	1.0	160
D	State of Utah	1.0	160
E	Private	1.0-3.0	80

Construction would proceed in a manner similar to that described for the Salt Wash site.

All temporary structures, fencing, utilities, and refuse would be removed after construction. Disturbed ground would be blended into the surrounding landscape.

A coal storage area, containing a 48-day supply of coal (1.86 million tons) would be maintained at the power generating station. Two active coal piles would store 120,000 tons of coal, about a 3-day supply. The remaining 45-day supply would cover 28 acres with coal piled 30 to 40 feet high in two inactive storage piles.

The in-plant coal handling system would receive coal, unload, weigh, sample, and store in stock piles adequate to allow a maximum total coal supply of 1,600 tons per hour for the four boiler units. Coal supply quality would be adjusted by spreading thin layers of different coal grades on the active piles to obtain desired coal characteristics.

Consumptive uses of water in the plant are shown on Figure 8.1-7. Waste water would be piped to evaporation ponds having a net surface area of 300 acres with provision for expansion to 1,130 surface acres. Ponds would be about 9 feet deep including waste storage, water, and 2 feet of freeboard. A synthetic liner, covered with a protective layer of soil 1 foot thick, would line the sides and floor of the evaporation ponds to prevent seepage to ground water. A typical cross section of the evaporation ponds is shown in Figure 8.1-8.

Particulate matter, sulfur dioxide, and nitrogen oxides would be controlled by hot electrostatic precipitators, lime scrubbers, and boiler design respectively. All pollutant control equipment would have the same capabilities as those proposed for the Salt Wash power generating station. Estimated plant emissions are shown on Table 8.1-6.

Two stacks, 710 feet tall, would be constructed for the four generating units to assist in dispersion of emissions. The stacks would be lighted with strobe lights to conform with Federal Aviation Agency Standards.

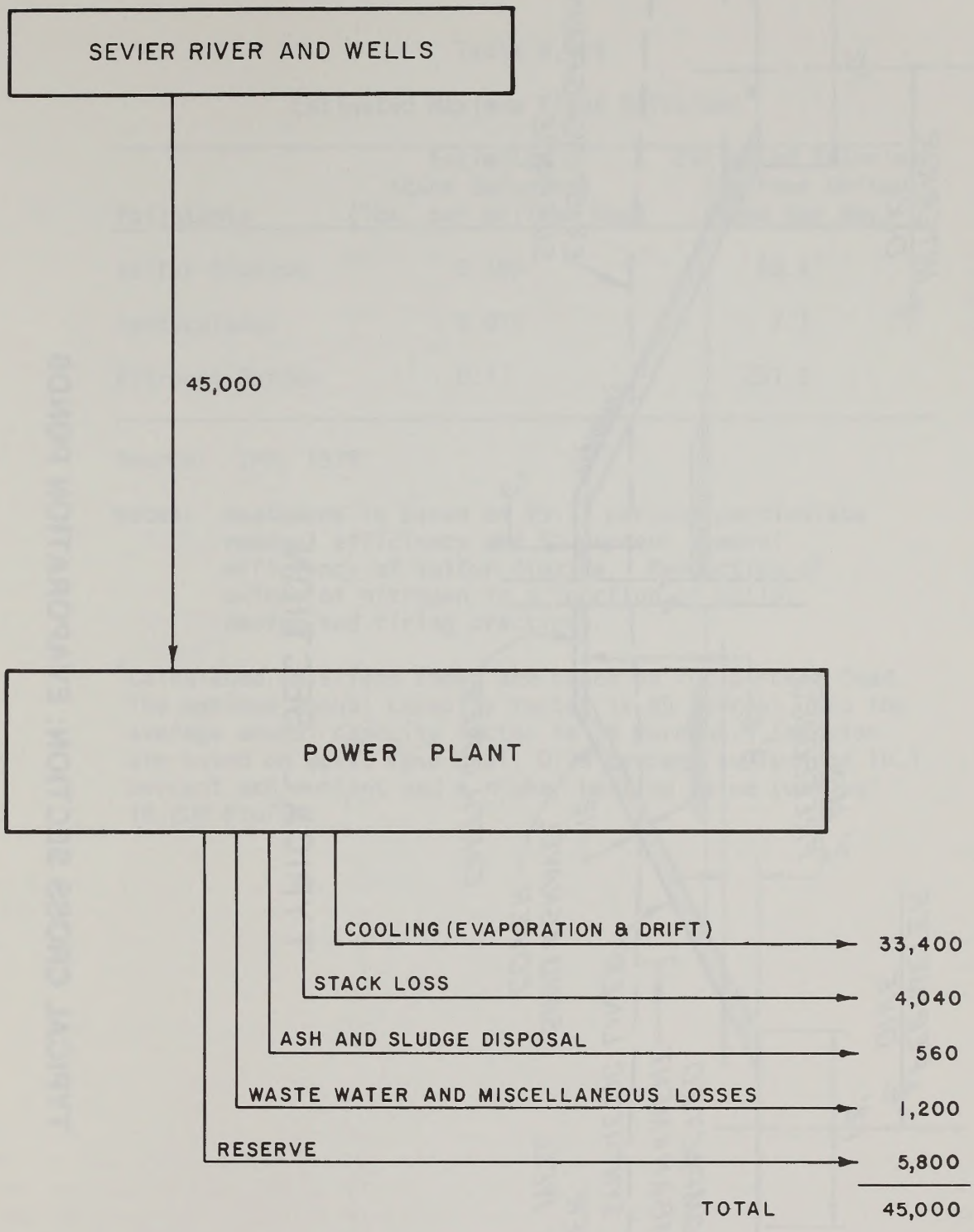
Solid waste disposal facilities would be designed for a maximum of 9,600 tons per day. The sulfur dioxide scrubber system would produce about 1,800 tons of lime sludge each day, which would contain 60 percent solid waste. Sludge would be mixed with ash collected from the boilers and electrostatic precipatators and hauled by truck to a 620-acre ash disposal area. About 52 million tons of solid wastes would be produced during the plant's life, yielding a 40-foot high waste pile. Runoff water from the solid waste pile would be collected and piped to the evaporation ponds.

A pipeline network would collect raw sewage and transport it to a sewage treatment plant. After treatment, the effluent would be discharged into a sewage lagoon. Initial design capacity of the system would be 19,000 gallons per day for 475 persons (assuming a design loading of 40 gallons per day per person). About 630 persons would eventually be permanently employed at the plant and the system would be expanded to treat 25,000 gallons per day.

A switchyard and converter station, would convert electrical voltages and current for distribution to the transmission system.

4. Water Supply System and Utility Corridor

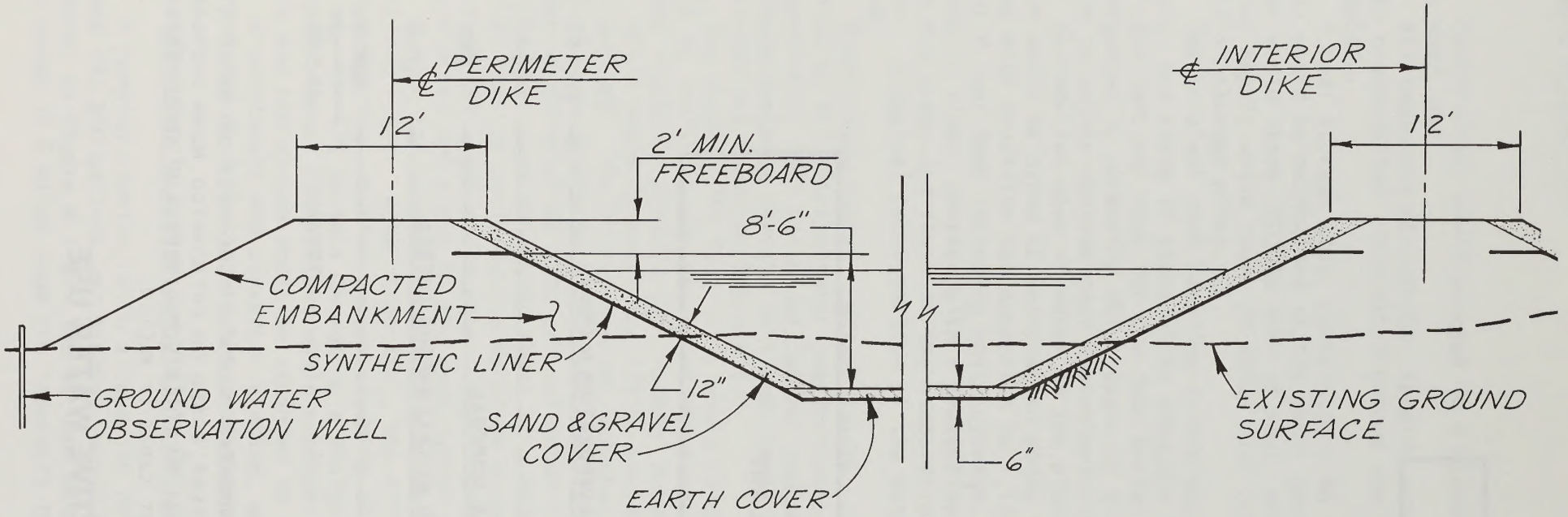
A pumping station, with a capacity to supply 74 cubic feet of water per second (33,000 gallons per minute), would be installed at the DMAD Reservoir as shown on Figure 8.1-9. Two 42-inch diameter buried pipelines would carry that water 11.5 miles from the reservoir to the plant. Within this 100-foot



NOTE: ALL NUMBERS INDICATE ACRE-FEET OF WATER PER YEAR; BASED ON ANTICIPATED MEAN AVERAGES, NORMAL WEATHER CONDITIONS, AND AN 85 PERCENT PLANT CAPACITY FACTOR.

CONSUMPTIVE WATER USE

FIGURE 8.1-7



TYPICAL SECTION

TYPICAL CROSS SECTION: EVAPORATION PONDS

FIGURE 8.1-8

Table 8.1-6

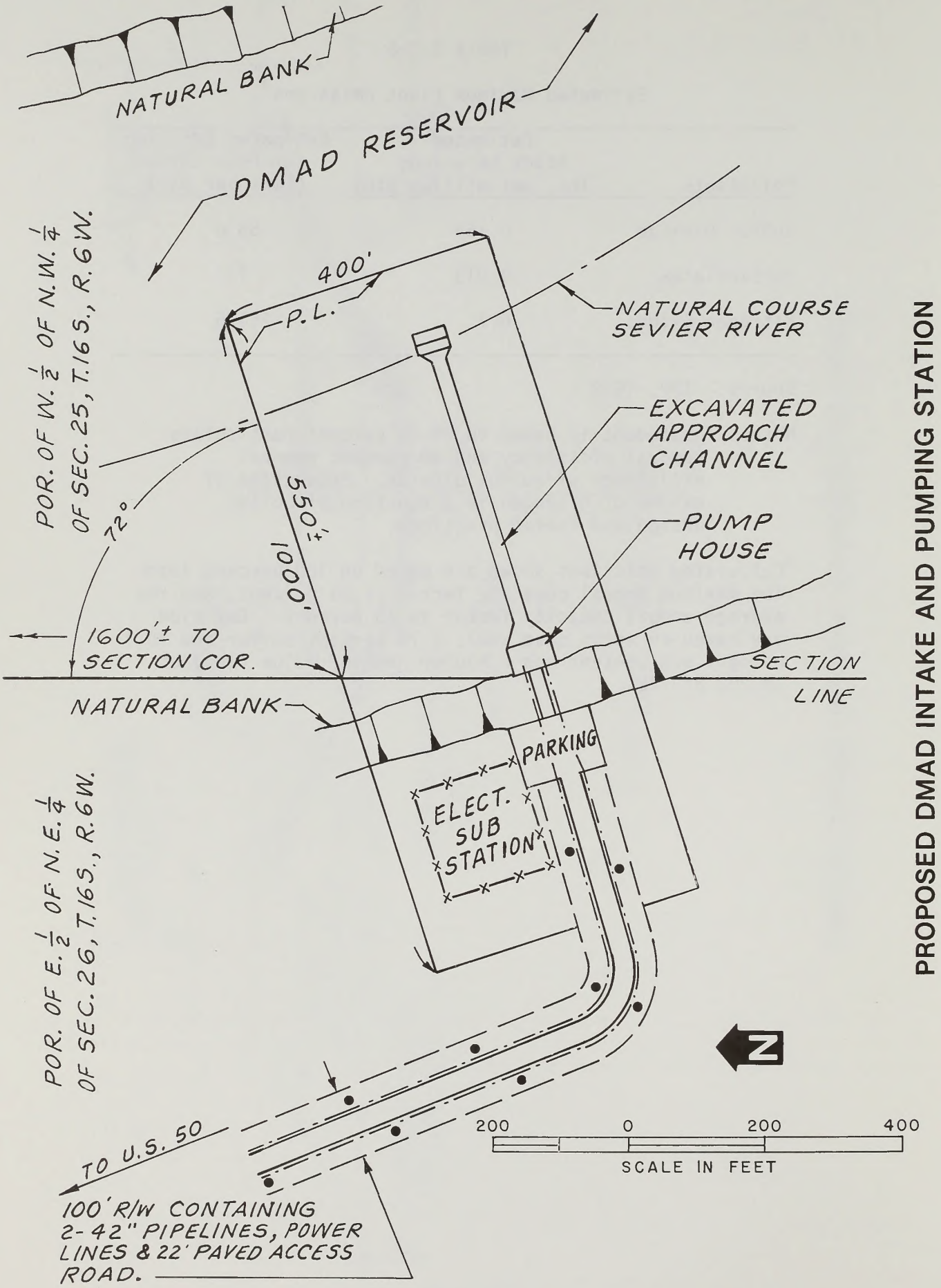
Estimated Maximum Plant Emissions[a]

Pollutants	Estimated Stack Emissions (lbs. per million Btu)	Estimated Emission for Four Units (tons per day)
Sulfur Dioxide	0.155	55.6
Particulates	0.019	7.1
Nitrogen Oxides	0.7	251.5

Source: IPP, 1978.

Notes: Abatement is based on 99.75 percent particulate removal efficiency and 90 percent removal efficiency of sulfur dioxide. Production of oxides of nitrogen is a function of boiler design and firing practices.

[a]Calculated emissions shown are based on 100 percent load. The maximum annual capacity factor is 85 percent, and the average annual capacity factor is 75 percent. Emission are based on worst case coal, 0.79 percent sulfur and 10.1 percent ash content and a higher heating value (wet) of 10,200 Btu/lb.



PROPOSED DMAD INTAKE AND PUMPING STATION

FIGURE 8.1-9

wide utility corridor, 23 miles of power lines (46-kV) and 9.1 miles of access road would be constructed. The buried pipelines, access road, and overhead power distribution lines would be constructed as shown on Figure 8.1-10. This utility corridor would be located entirely on public lands administered by the Bureau of Land Management.

5. Railroad

Coal would be transported to the site's vicinity by existing railroads operated by the Denver and Rio Grande Western and the Union Pacific Companies. Four 84-car unit trains per day would be required to transport the coal from mining areas to power generating stations. The trains would operate five to six days per week. About 17.3 miles of a new single track railroad, of which 10.1 miles would be outside plant boundaries, would be needed to haul coal westward from the existing Union Pacific Company railroad near Lynndyl, Utah. Land ownership and acres included in the proposed spur railroad right-of-way are shown in Table 8.1-7. The 7.2 miles of railroad within the boundaries of the power generating station would be for unloading loops, sidings and spur lines (see Figure 8-1-3).

Water drainage structures, protective fences, and livestock crossings would be provided along the spur railroad where there are potential hazards to humans, livestock, or wildlife. Livestock and animal undercrossings would be provided as necessary.

About 161,000 cubic yards of crushed rock and sub-ballast material would be required to support the track structure. Local sub-grade materials would be used to construct embankments. All material (earth, rock, sand and gravel) needed in addition to that available within the proposed right-of-way would be obtained from the five material areas identified on Table 8.1-5.

6. Construction Delivery and Transportation

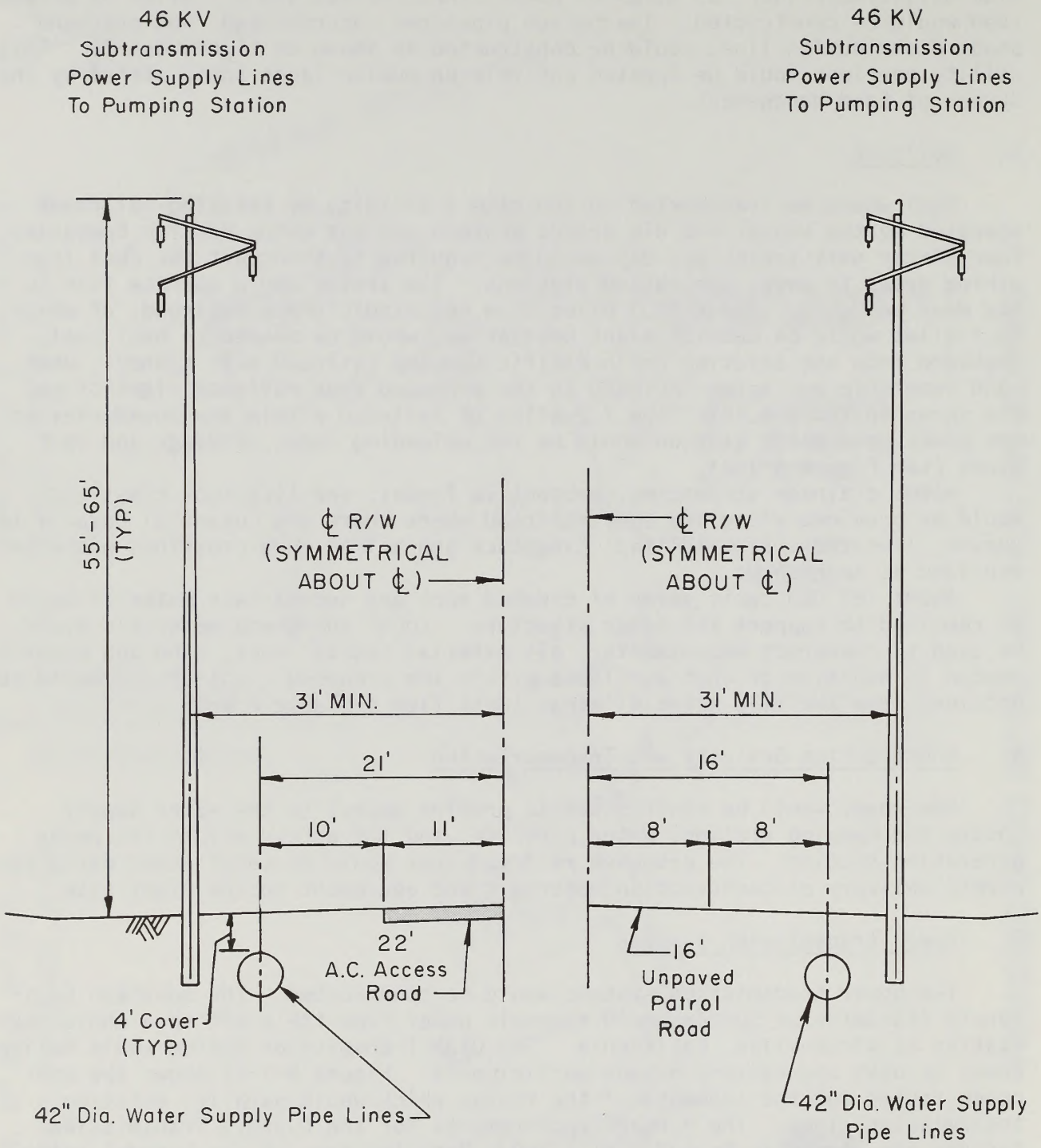
New roads would be constructed to provide access to the water supply intake and pumping station, water pipeline, and for access within the power generating station. The proposed railroad spur would be constructed early to permit delivery of construction materials and equipment to the plant site.

7. Power Transmission Systems

Two power transmission systems would be constructed. The Southern California Transmission System would transmit power from the plant to a converter station at Victorville, California. The Utah Transmission System would deliver power to Utah and eastern Nevada participants. Figure 8-1-11 shows the proposed routes and the segments of the routes which would parallel existing transmission lines. The acreage requirements for the Lynndyl Transmission Systems are listed in Appendix VIII.1-2. Detailed maps of the Lynndyl transmission routes are found in Appendix VIII.1-3.

a. Southern California Transmission System

Two 500-kilovolt, direct current (kV d.c.) power lines would be constructed between the plant and the proposed Victorville converter station. The station would convert the electricity from direct to alternating current and the power would then be transmitted over existing transmission lines to Los Angeles Basin.



SOUTHEAST OF U.S. HWY. 50

NORTHWEST OF U.S. HWY. 50

UTILITY COMMON CORRIDOR

FIGURE 8.1-10

TABLE 8.1-7

Land Ownership Along Spur Railroad
Right-of-Way Outside of Plant Site Boundary

Land Ownership	Line Miles	Acres 100-foot Right-of-Way	Percentage
U.S. Government (BLM)	7.0	85	69.3
State of Utah	1.0	12	9.9
Private Lands	2.1	25	20.8
Total	10.1	122	100.0

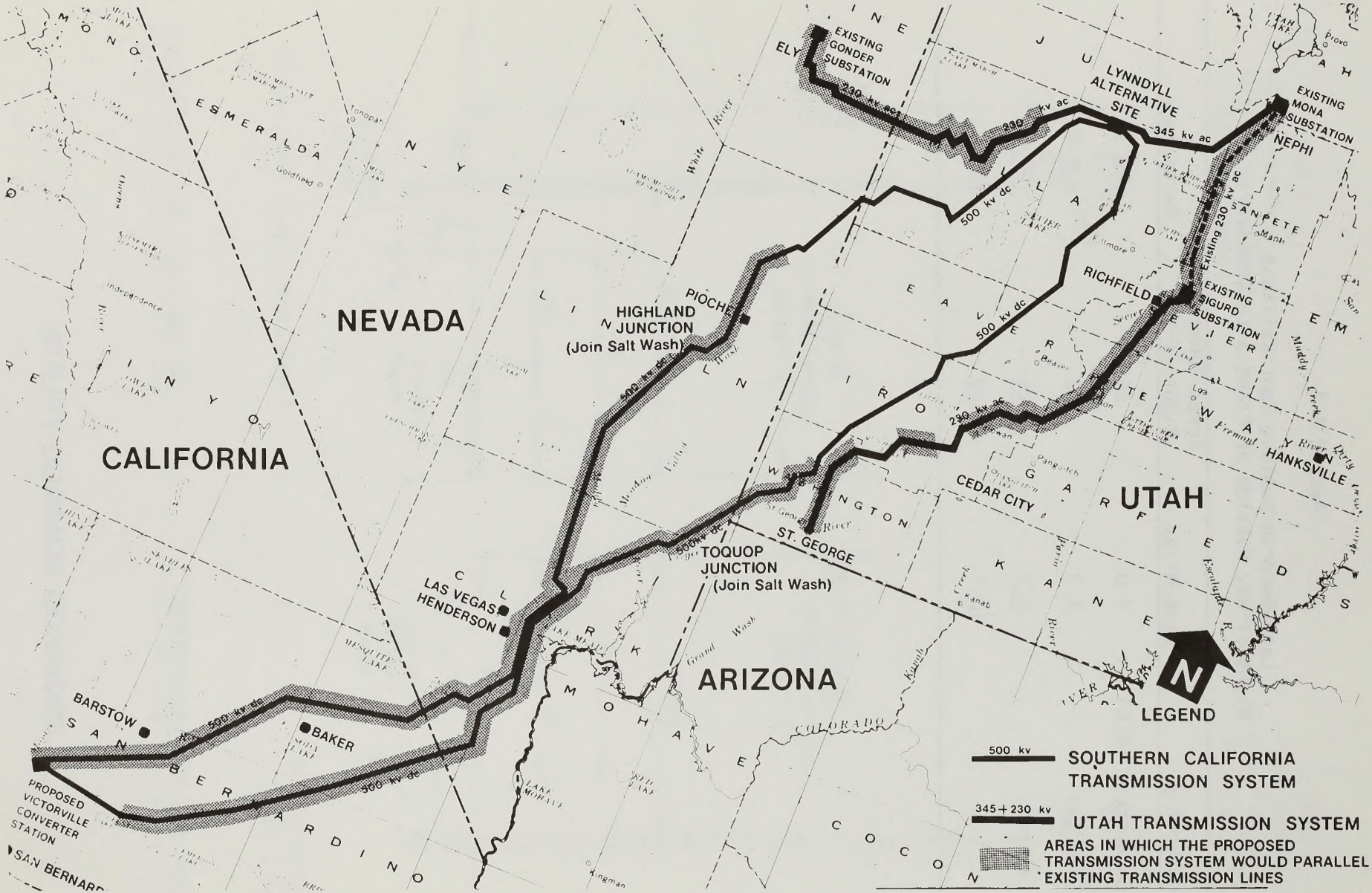


FIGURE 8.1-11

AREAS IN WHICH THE PROPOSED TRANSMISSION SYSTEM WOULD PARALLEL EXISTING LINES

About 1,160 miles of access road would be needed for construction and maintainence of the system. About 760 miles of access roads are existing and about 398 miles of new road would be required. Existing roads range from primitive, single-lane dirt roads to asphalt surfaced highways maintained by state highway departments. Most new access would be within the transmission line right-of-way. IPP estimates, however, that about 50 miles (85 acres) would be needed outside the proposed right-of-way due to difficult or environmental and cultural concerns. New access roads would be dirt and no wider than required to accommodate construction equipment.

Each mile of transmission line would require about four towers. Short "stub" roads would be required from the access roads to each tower site.

Access to the transmission line right-of-way would require another 30 miles (51 acres) of roads from existing roads and highways. These roads would be dirt surfaced and no wider than necessary to accomodate equipment.

Transmission line right-of-way needs and land ownership are shown on Table 8.1-8.

TABLE 8.1-8

Southern California Transmission System
Right-of-Way Requirements

Transmission Lines	Total Length Miles	Administration and Land Ownership in Miles					Total R/W Acreage
		BLM	Bureau of Reclamation	Forest Service	State	Private	
Line I	468	424	0	0	19	25	11,782
Line II	458	339	1	11	22	85	6,080
Common Route	38	29	4	0	0	5	1,520
Total	964	792	5	11	41	115	19,382

Source: Appendix VIII.1-4.

Tower design, construction phases, and other activities would be similar to those described for the Salt Wash Site.

b. Utah Transmission System

This system would serve participants in the Intermountain Consumer Power Association, Price City, and the Utah Power and Light Company (UP&L). (See Figure 8.1-5 for the route locations.)

A 144-mile long, 230-kV a.c. transmission line would extend from the plant to the Gonder substation near Ely, Nevada. Two 345-kV a.c. transmission lines would share a common corridor between the power generating station and the proposed Mona Substation. Right-of-way requirments are shown on Table 8.1-9.

From the proposed Mona Substation, UP&L would carry power over its existing distribution systems and interconnect with ICPA's internal power distribution systems.

TABLE 8.1-9

Right-of-Way Requirements for the
Independent Segments of the Utah Transmission System

Transmission Routes	Total Length Miles	Administration and Land Ownership in Miles				Acres[a]
		BLM	USFS	State	Private	
Little Drum Junction to Gonder Substation (Ely, Nevada) one 230-kV a.c. line	120	101	8	6	5	1,600
U. P. Junction to Mona Substation two 345-kV a.c. lines	42	14	3	2	23	1,527
Sigurd Substation to St. George Substation one 230-kV a.c. line	169	64	30	11	64	2,254
Totals	331	179	41	19	92	5,381

Source: Appendix VIII.1-2.

[a]Thirty-two miles of the Utah Transmission System (Lynndyl plant site to Little Drum Junction--24 miles, and Lynndyl plant site to U.P. Junction--8 miles) are in a common right-of-way with the Southern California Transmission System and have been included in the totals on Table 8.1-8.

A new 230-kV a.c. transmission line, 169 miles long, would be constructed from UP&L's Sigurd substation to a substation near St. George, Utah.

IPP estimates that about 320 miles of existing access roads would be used for the Utah Transmission System and that 90 miles of new road would be required. In addition, about 50 miles of dirt road would be needed outside the transmission line right-of-way to avoid difficult terrain. Also needed would be 15 miles (26 acres) of new roads to reach the transmission route right-of-way from existing roads.

Construction phases and activities would be essentially the same as those proposed for the Salt Wash site transmission system. Transmission line structures would be the same as described for Salt Wash.

The transmission lines would be maintained in the manner described for the Salt Wash Proposal.

c. Substations

Two new substations would be constructed to serve the Utah Transmission System (see Figure 8.1-5). About 5 acres of private land would be required near St. George, Utah and UP&L would construct a substation on about 40 acres of land at Mona, Utah, about 6 miles north of Nephi, Utah.

Additional switchgear and transformers would be installed at three existing substations--Gonder, near Ely, Nevada; Sigurd, near Sigurd, Utah; and Paragonah, near Paragonah, Utah.

8. Utility Systems

(a) Microwave Communication Sites

A microwave communication system would extend from the Lynndyl site to the Victorville converter station as shown on Figure 8.1-12. This would require installation of new radio repeater stations on four existing communication sites: Clear Lake, about 8 miles west of Clear Lake, Utah; Mineral Mountain, about 16 miles northeast of Milford, Utah; Lund, about 5 miles west of Latimer, Utah; and Big Mountain, about 28 miles north of St. George, Utah. Installations would require a new 8-foot by 22-foot prefabricated building and a tower about 70 feet high. Existing access roads and electrical power would be used.

Five existing microwave stations would complete the communications system. The sites--Beaver Dam, Glendale, Apex Peak, Red Mountain, and Quartzite--would not require any new structures, but additional electronic equipment would be installed and amended authorization required if located on public lands.

(b) Auxillary Electrical Power

Maximum construction power requirements would be 5 MW and would be provided by UP&L's present 46 kV system in the Delta, Utah area. Electrical power would be delivered to the site by early construction of one of the proposed 46-kV power lines for the plant's water supply. The line would supply power to the pumps after it is no longer needed for construction.

9. Construction and Permanent Work Forces

During the peak period of construction in 1985, a total of 3,566 employees would be needed as shown on Table 8.1-10. A total of 676 employees would be

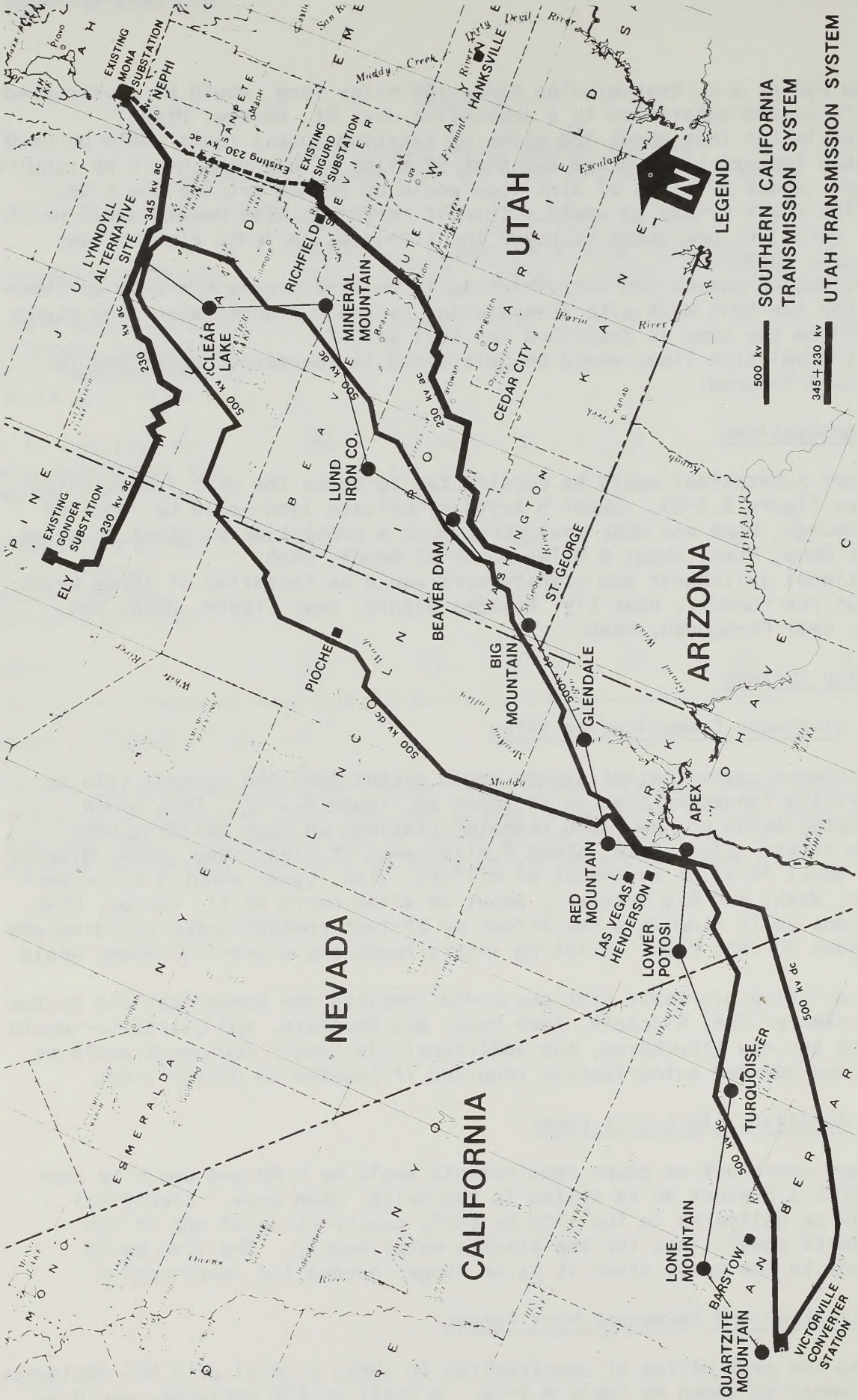

EXISTING MONA SUBSTATION
NEPHI
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
HANKSVILLE
LYNNDYLL ALTERNATIVE SITE
345 kv ac
230 kv ac
500 kv dc
RICHFIELD
CLEAR LAKE
MINERAL MOUNTAIN
CEDAR CITY
UTAH
EXISTING GONDER SUBSTATION
ELY
LUND IRON CO.
BEAVER DAM
ST. GEORGE
PIOCHE
BIG MOUNTAIN
GLENDALE
ARIZONA
APEX
RED MOUNTAIN
LAS VEGAS
HENDERSON
LOWER POTOSI
TURQUOISE
LONE MOUNTAIN
BARSTOW
QUARTZITE MOUNTAIN
VICTORVILLE CONVERTER STATION
NEVADA
CALIFORNIA
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
UTAH TRANSMISSION SYSTEM
500 kv
345+230 kv
MICROWAVE COMMUNICATION SYSTEM

FIGURE 8.1-12

TABLE 8.1-10

Annual Peak Employment By Year
(Construction)

Year	Plant	Communication Sites and Transmission Lines	Victorville Converter Station and Substation
1981	80	0	55
1982	160	0	88
1983	835	130	332
1984	1,700	538	412
1985	2,500	804	262
1986	2,520	326	164
1987	2,230	523	364
1988	1,690	525	414
1989	905	0	94
1990	10	0	0

Source: IPP--Preliminery Engineering and Feasibility Study, Volume 6, July, 1978.

needed during operation as shown on Table 8.1-11. Workers would be recruited from Utah, if possible.

Project proponents have offered to work with various trade schools in Utah and the Utah State Employment Security Office in training personnel to provide the required labor force (IPP, Preliminary Engineering and Feasibility Study, Volume IV, July 1978).

(a) Power Generating Station and Coal Transportation

Peak direct construction employment at the plant would reach 2,520 workers in 1986 (see Table 8.1-10).

A total of 630 operational personnel (see Table 8.1-11) would be required when the power generating station is fully operational.

The permanent work force required for the coal haul railroad would be provided by the railroad companies. About 60 persons would be required to operate the railroad system and about 30 maintenance workers would be needed.

b. Power Transmission, Communication Systems, and Victorville Converter Station

A maximum of 804 construction workers would be required in 1985 for the combined transmission systems. Seven operating and maintenance employees would be needed by 1989. The transmission lines would be constructed in several segments and stages. Existing communities would provide housing in commercial rental units, travel trailers, or mobile homes. Housing units would be individually owned or rented. Where commercial lodging is unavailable within a reasonable distance from the construction site, IPP would require the contractor to provide camps to accomodate the workers. These camps would consist of graded areas equipped with laundry, bath houses, and sewage treatment facilities. It is expected that each camp site would be on land leased from private land holders.

Construction forces for the Victorville converter station, as well as most of the 39 employees associated with the operation and maintenance of the converter station, would reside in Victorville, California.

c. Lime Supply and Transportation System

The U.S. Lime Division, Flintkote Company would need 12 to 14 additional personnel to mine, process, and deliver the lime to the railroad. These workers would come from the relatively large labor pool in the Salt Lake City area.

10. Environmental Monitoring

Meteorological, stack emission, and water quality monitoring, as well as decommissioning would be carried out as described for the Salt Wash proposal (see Volume I, Chapter 1).

11. Development Schedule

Figure 1-3 (in Volume I, Chapter 1) shows IPP's proposed development schedule. The first generating unit would begin commercial operation July 1, 1986 and Units 2, 3, and 4 would follow at one year intervals.

TABLE 8.1-11

Annual Peak Employment By Year
(Operations)

Year	Plant	Communication Sites and Transmission Lines	Victorville Converter Station
1985	135	0	5
1986	270	0	20
1987	355	4	20
1988	510	5	30
1989	630	7	39
1990	630	7	39

Source: IPP--Preliminary Engineering and Feasibility Study, Vol. 6, July, 1978.

12. Government Authorizing Actions Required

Table 8.1-12 summaries the authorizing actions which would be required by the federal government.

TABLE 8.1-12

Federal Authorizing Actions

Project Feature	Magnitude	Authorizing Actions	Authority
		Bureau of Land Management	
Generating Station and Support Facilities (plant site).	4,640 acres.	Transfer ownership[a] (land sale)	Title II of Federal Land Policy and Management Act of 1976 (90 stat. 2750, et seq.) Section 203.
Buried water pipelines, power lines, and access road to water intake and pumping station.	Common transportation utility corridor: Length: 9.75 miles Width: 100 feet.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Coal haul railroad spur.	Length: 7.0 miles Width: 100 feet.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Microwave Stations			
Clear Lake Microwave Communication Station.	Equipment to be installed at existing facility.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Mineral Mountain Microwave Communication Station.	Equipment to be installed at existing facility.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Lund Iron County Microwave Communication Station.	Equipment to be installed at existing facility.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Technical site investigations (power generating complex).	Preliminary investigation included 500 sq. ft. in blocks of 100 sq. ft.	Issue Temporary Use Permit.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2778, et. seq.)
Ground Water System			
Four Production Wells	Each well site would occupy 0.46 surface Acres.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Power Transmission			
Southern California System: Two 500-kV d.c. electrical power transmission lines would extend from the power generating station in Millard County, Utah, to a converter station near Victorville, California. Existing power lines would thereafter carry electricity for distribution to customers in the Los Angeles area.	792 miles of right-of-way would cross public land in Utah, Nevada, and California	Grant right-of-way.	Title V of Federal Land Policy[a] and Management Act of 1976 (90 stat. 2776, et seq.).

TABLE 8.1-12 (continued)

Project Feature	Magnitude	Authorizing Actions	Authority
Utah Transmission System: This system would have 345-kV and 230-kV facilities.	179 miles of new right-of-way would extend across public lands in Utah and eastern Nevada.	Grant right-of-way.[a]	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
		Forest Service (Dixie National Forest)	
Microwave Stations			
Big Mountain Microwave Communication System.	Equipment to be installed at existing facility.	Grant right-of-way.	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
Southern California and Utah Transmission Systems			
Two electrical power transmission lines; one 500-kV and one 230-kV.	35 miles of transmission line would cross National Forest.	Grant right-of-way.[a]	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
		(Fishlake National Forest)	
Utah Transmission System			
Three electrical power lines, one 230-kV and two 345-kV.	Nine miles of transmission line would cross National Forest.	Grant right-of-way.[a]	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
		(Humboldt National Forest)	
Utah Transmission System			
One 230-kV electric power transmission line.	Eight miles of transmission line would cross National Forest.	Grant right-of-way.[a]	Title V of Federal Land Policy and Management Act of 1976 (90 stat. 2776, et seq.).
		Federal Communication Commission	
Microwave Communication Station.	One new microwave station would be constructed in Utah. Additional equipment would be installed at nine existing stations.	Grant license to construct new station and continue utilization of existing stations.	Act of June 19, 1934 as amended; 48 stat. 1082; 47 U.S.C. 303; 47 CFR 1.70.
		Rural Electrification Administration	
Intermountain Power Project.	3,000 MW coal-fired generating station and ancillary features.	Approve participation of Rural Electric Cooperatives in project.	Rural Electrification Act of of 1936, 49 stat. 1363, Chap. 31; 7 U.S.C. 901-950(6).
		Federal Aviation Agency	
Concrete Chimneys (stacks).	Two stacks 710 feet tall would be constructed within power generating complex. Might affect navigable air space.	Issue Air Space Permit.	Federal Aviation Act of 1958, 72 stat. 749; 797, 49 U.S.C. 1347, 1501; 14 CFR 77.

TABLE 8.1-12 (concluded)

Project Feature	Magnitude	Authorizing Actions	Authority
		Corp of Engineers	
DMAD Intake and Pumping Station.	Intake and pumping station would occupy 400 feet by 1,000 feet area (9.18 acres).	Issue Permit.	Federal Clean Water Act of 1977 (33 U.S.C. 1251).
		Federal Energy Regulatory Commission	
Intermountain Power Project	3,000 MW coal-fired generating station and ancillary features.	Approve participation of UP&L in project.	Federal Power Act of 1970, as amended.
		Environmental Protection Agency	
Power generating complex and ancillary features.	Construction of 3,000 MW power generating plant, water storage facilities, 1,295 miles of power transmission lines, access roads, development of material sites, and other project components.	Issue a construction permit.	Clean Air Act Compliance with the Prevention of Significant Deterioration Regulation (43 U.S.C. 1701, as amended August, 1977).

[a]Appendix I-9 gives further detail about federal authorizing actions.

Table 8.1-13 lists the authorizing actions which would be required of the states of Utah, Nevada, and California.

TABLE 8.1-13

State Authorizing Actions

Project Feature	Magnitude	Authorizing Actions	Authority
		State of Utah Department of Transportation	
Power transmission routes.	Twenty-one crossings over state highways or federal system roads by power transmission lines.	Issue Encroachment Permit.	Utah Code Annotated (U.C.A.) 1953, as amended 27-9-9 through 11.
		Division of Water Rights	
Water sources.	About 39,200 acre-feet of surface and ground water would be used annually.	Approve water appropriation applications filed by proponents of the IPP (change of location, nature of use)	U.C.A., 73-3-1, 73-3-2, 73-3-8.
		Division of Health Branch of Environmental Services	
Project components related to pollution production and control.	Power generating complex and ancillary features (boilers, precipitators, scrubbers, etc.).	Issue permit.	U.C.A., 1953, as amended chapters 24-26.
Solid waste disposal plans.	All solid waste related to proposed power plant.	Approval of plans.	U.C.A., as amended, Title 26.
Culinary water source and treatment plant.	Domestic water supply.	Issue permits.	U.C.A., 1953 Sec. 26-15-4.
		Utah State Division of Lands	
Coal haul railroad spur.	Length: 1.0 miles Width: 100 feet.	Grant right-of-way.	U.C.A., 1953 as amended 65-2-1.
Construction materials for roads, power plant complex, railroad spur, and miscellaneous.	Two borrow areas, 160 acres each (sand, gravel, etc.).	Issue Sands, Gravel, and Fill Material Permit.	U.C.A., Section 65-1-18.
Buried water pipeline power lines, and access road to water intake and pumping station.	Common transportation-utility corridor Length: 1.75 miles Width: 100 feet.	Grant right-of-way.	U.C.A., as amended 65-2-1.

TABLE 8.1-13 (continued)

Project Feature	Magnitude	Authorizing Actions	Authority
Power Transmission Routes			
Southern California System.	30 miles of power-line would cross state-owned land in Utah. R/W width would vary. Access roads would also be needed.	Grant right-of-way.	U.C.A., 1953 as amended 65-2-1.
Utah System.	19 miles of power-line would cross state-owned land in Utah. R/W widths would vary. Access roads would also be needed.	Grant right-of-way.	U.C.A., 1953 as amended 65-2-1.
		Public Service Commission	
Intermountain Power Project	3,000 MW coal-fired generating station and ancillary features.	Approve participation of UP&L in project.	Utah Code Annotated 1953 Title 54.
		State of Nevada Governor's Clearing House	
Southern California and Utah Systems		Land Use and Building Permits.	Office of Management and Budget A-95.
		Enforce Fugitive Dust Standards.	Utility Environmental Protection Act
		Issue Encroachment Permits for T/L crossing state highways.	Various.
		Grant Certificate of Public Convenience and Necessity.	
		Issue permits for construction of T/L.	
		Division of Colorado River Resources Eldorado Valley Commission	
	Approximately 15 miles of 500-kV transmission line would cross Eldorado Valley	Endorse proposed transmission route.	State of Nevada Eldorado Act.
		State of California	
Power Transmission Lines Southern California System.	Two transmission lines 500-kV 11 miles long.	Grant right-of-way.	Office of Management and Budget, A-95.
Intermountain Power Project.	3,000 MW coal-fired generating station, support facilities, power transmission lines, and communication system.	Certify IPP Environmental Report.	California Environmental Quality Act.

TABLE 8.1-13 (concluded)

Project Feature	Magnitude	Authorizing Actions	Authority
		California Municipal Utilities	
Intermountain Power Project	3,000 MW coal-fired generating station and ancillary features.	Certify IPP Environmental Impact Report and approve participation in project.	California Environmental Quality Act of 1970, as amended.

Table 8.1-14 lists those authorizing actions which would be required of local agencies.

TABLE 8.1-14

Local Authorizing Actions

Project Feature	Magnitude	Authorizing Actions	Authority
		Utah Millard County	
Power plant and ancillary facilities.	Approximately 11,000 acres of right-of-way requests.	Zoning Variance.	Millard County Master Plan October 1969.
		Nevada Lincoln County	
Southern California System.	Two 500-kV d.c. power line 168 miles.	Lincoln County Commission Grant Use Permit.	Various county regulations.
		Road Department Must issue encroachment permit before transmission lines are constructed across county or municipal roads.	
		White Pine County None needed.	

C. DESCRIPTION OF EXISTING ENVIRONMENT

1. Introduction

This section describes the critical elements of the environment likely to be affected by development of IPP at the Lynndyl alternative site.

Figure 8.2-1 delineates a regional setting, based on a 2-hour driving distance from the Lynndyl site, throughout which travel related and secondary effects could be expected. Within the regional setting, other areas of concern are identified to provide further focus for particular resource categories.

The "Project Area" for the Lynndyl site is defined as the 4,640 acre plant site, the spur railroad, the water conveyance system between the DMAD Reservoir and the plant site, and the five borrow areas (see Figure 8.1-4).

"Environmental Profiles" show major features of the environment through which the project's linear components would pass. The environmental profiles, Figures 8.2-A through 8.2-G, can be found at the end of this chapter.

The Lynndyl Alternative would also use about 570 miles of the Southern California Transmission System originally proposed for the Salt Wash Site (see Figure 8.1-5). The environment along the common portions of the Southern California Transmission Lines are described in Volume I, Chapter 2.

2. Climate

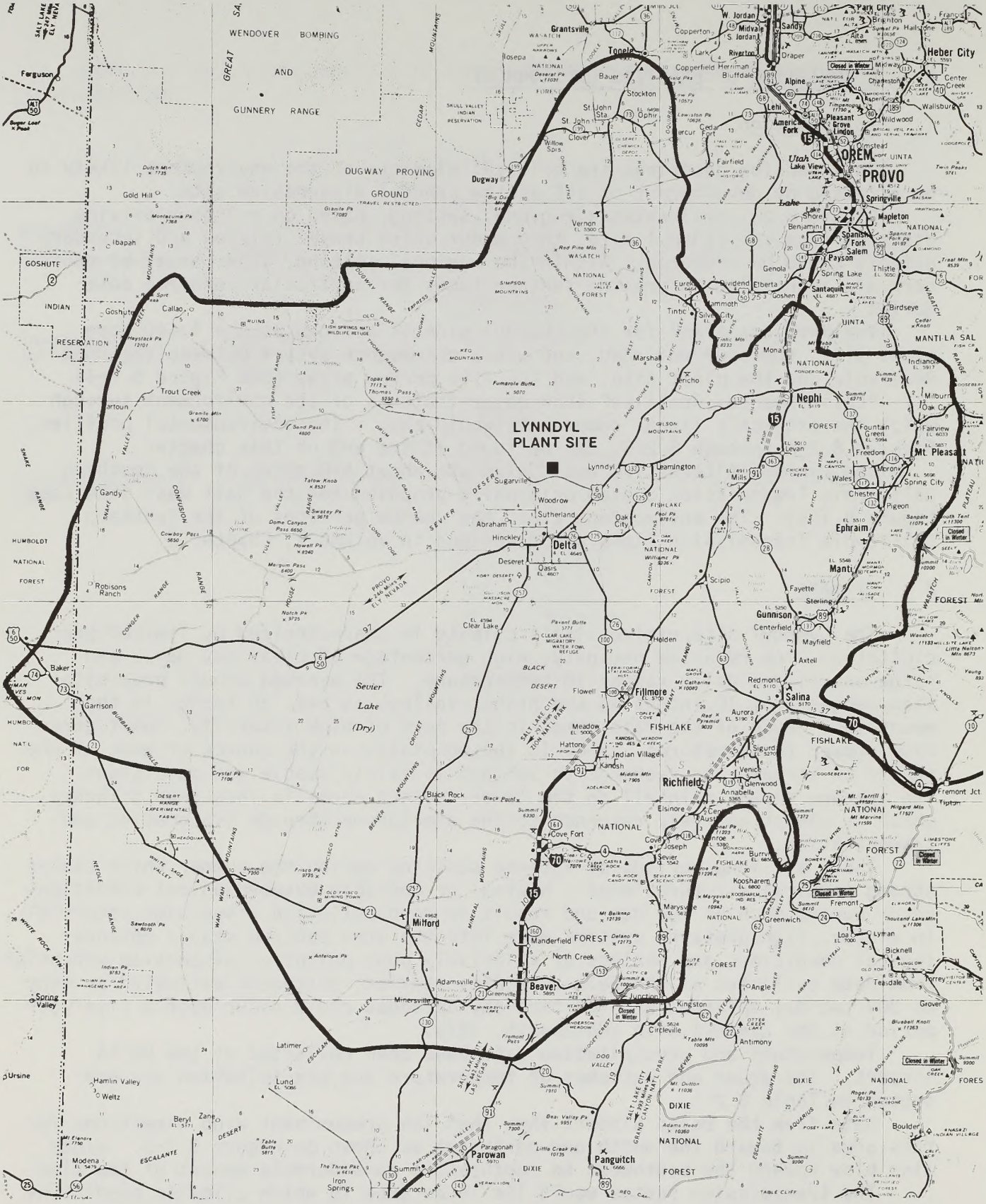
The Lynndyl alternative site's climate is characterized by limited precipitation, low relative humidity, high percentage of clear-sky days, and large annual and daily ranges in temperature. The average annual precipitation ranges from 10 inches in the higher valleys to over 30 inches in the mountains. Much of the rain comes in the form of high intensity, short duration summer thunderstorms. Snow in the mountains is the source of most of the runoff to streams and recharge to springs is fairly stable and consistant. The average annual rainfall on the lower, desert areas is less than 8 inches which is almost entirely returned to the atmosphere through evaporation and transpiration.

There are long periods of intense sunshine during the summer which causes strong vertical air turbulence. Neutral or unstable meteorological conditions occur during much of the day and result in good pollution dispersion potential. In winter, high pressure systems move into the area causing stable meteorological conditions and periods of relatively poor pollution dispersion potential. From data collected at the Sale Lake City station, Holzworth estimated as many as 300 two-day episodes and 100 five-day episodes could occur over a five-year period at the Lynndyl site (Holzworth, 1972).

Temperature and precipitation data have been collected at the Delta Airport. The means and extremes of temperature and precipitation are presented on Table 8.2-1.

Data from the Delta Airport show that the predominant wind directions for this area is toward the north and northeast as shown on Figure 8.2-2. Winds also blow toward the southwest to southeast a considerable amount of the time.

The transmission routes would lie in an area in which climatic conditions are influenced by the Sierra Nevada Range on the west and the Rocky Mountains on the east. The Sierra Nevada Range effectively reduces the amount of moisture flowing into the area from Pacific Ocean storms. The Rocky Mountains tend to divert cold air masses moving southward from Canada and prevent them from reaching this area. Summer thunderstorms result from moist air masses which originate in the Gulf of Mexico or the Gulf of California.



TRAVEL INFLUENCE REGIONAL SETTING

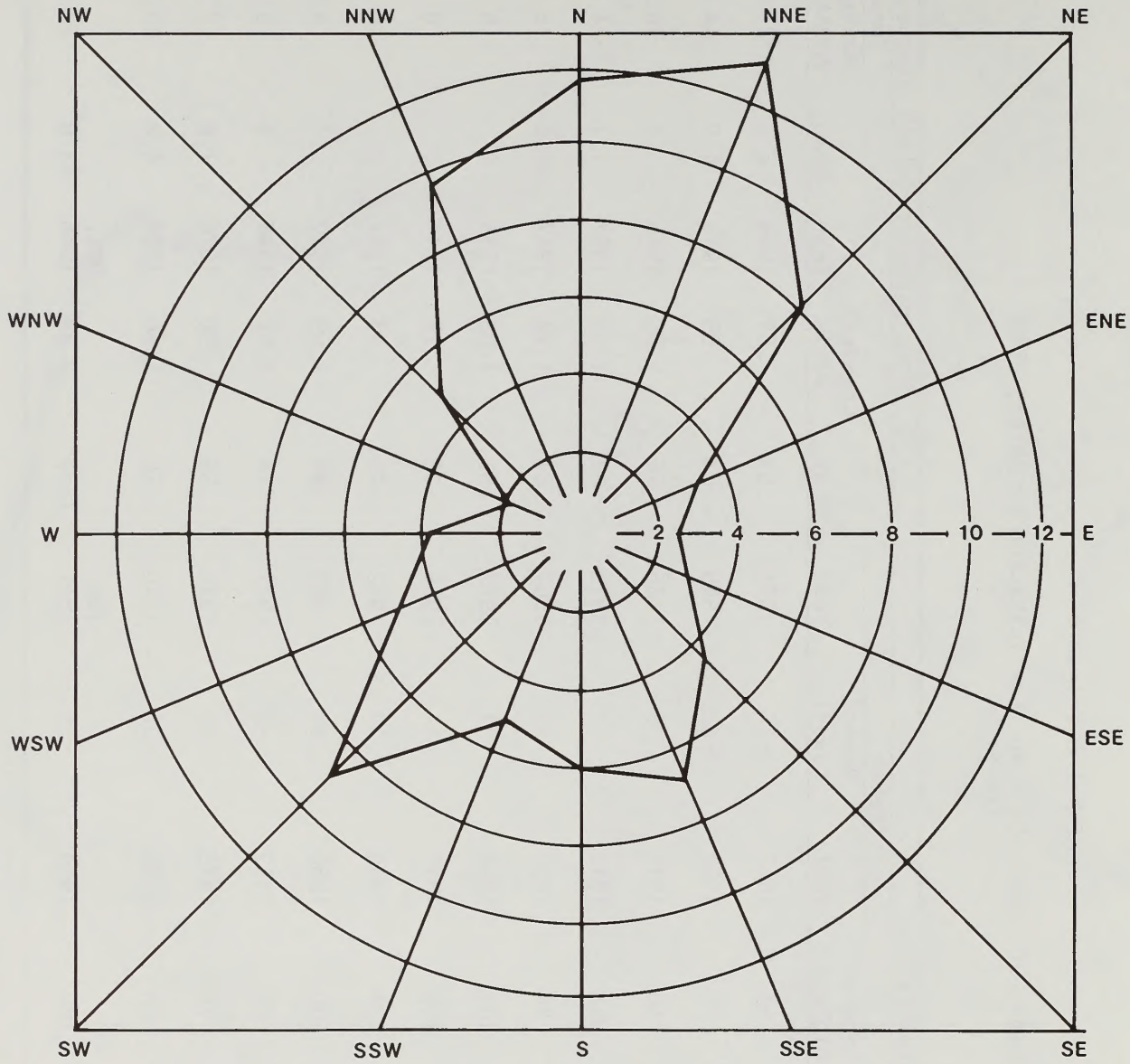
FIGURE 8.2-1

TABLE 8.2-1

Means and Extremes of Temperature and Precipitation at Delta, Utah
1938-1975

	Temperature °F							Precipitation Totals (inches)					
	Means			Extremes							Snow		
Month	Daily Maximum	Daily Minimum	Monthly	Record Highest	Year	Record Lowest	Year	Mean	Greatest Daily	Year	Mean	Maximum Monthly	Year
January	38.0	12.7	25.5	64	1953	-25	1971	.53	.61	1954	6.3	27.9	1949
February	44.6	19.7	32.1	74	1972	-22	1949	.83	.89	1949	4.0	14.0	1949
March	53.3	25.4	39.4	80	1972	-8	1966	.76	.96	1945	3.7	18.7	1952
April	63.2	33.3	48.3	88	1943	13	1975	.83	1.22	1957	1.1	4.7	1953
May	72.5	42.3	58.2	94	1951	21	1967	.87	1.24	1947	.8	18.0	1975
June	84.2	49.9	67.0	106	1954	31	1973	.56	1.08	1939	0	0	....
July	94.0	58.6	76.3	106	1943	41	1938	.46	.77	1941	0	0	....
August	91.7	56.6	74.1	104	1940	37	1962	.46	.93	1947	0	0	....
September	81.7	46.0	63.9	100	1950	24	1965	.48	1.09	1970	.1	4.0	1965
October	68.0	34.4	51.6	88	1963	-2	1971	.74	2.59	1946	.4	5.5	1954
November	50.9	23.4	37.2	75	1973	-6	1938	.55	.80	1970	1.8	7.9	1942
December	40.4	16.4	28.4	66	1964	-25	1940	.70	1.60	1957	4.8	23.0	1948
Annual	65.2	34.9	50.1	106	1954	-25	Jan. 1971	7.77	2.59	Oct. 1946	23.0	27.9	Jan. 1949

Source: Arlo Richardson, Utah State Climatologist, 1978.



SOURCE: Bowers et al., 1978a

Note: Wind directions are those toward which the wind is blowing.

ANNUAL WIND DIRECTION DISTRIBUTION AT DELTA, UTAH BETWEEN 1949 AND 1954

FIGURE 8.2-2

There are four general climatic zones in the areas of the proposed transmission routes: (1) cold desert (high elevation), (2) hot desert (low elevation), (3) mountains, and (4) mountain valleys. Table 8.2-2 summarizes precipitation along the proposed routes.

3. Air Quality

a. Standards

Prevention of Significant Deterioration (PSD)

The Lynndyl site would be located in a Class II Prevention of Significant Deterioration area and the nearest existing Class I area (extremely limited air quality degradation permitted), Capitol Reef National Park, is over 93 miles southeast of the site. The Deep Creek Mountain area, 66 miles northwest of the Lynndyl site, is being considered by BLM for possible recommendation to the State of Utah for redesignation to Class I status.

b. Existing Air Quality

Few ambient air quality data measurements have been made in the vicinity of the Lynndyl alternative site. Particulate concentration measurements, made by the State of Utah between August and December 1977, show that the 24-hour secondary National Ambient Air Quality Standard (NAAQS) for particulates (150 micrograms per cubic meter [$\mu g/m^3$]) is exceeded on occasion in nearby Delta, Utah. The Utah Bureau of Air Quality, however, believes that the measurements were not representative of ambient air quality because the high volume sampler is near several roads. Because the Lynndyl site is in a rural area without nearby significant point sources of pollution, data from other rural Utah areas, which are also isolated from major point sources, are indicative of the approximate levels of pollutants in the Lynndyl site area (Bowers, et al., 1978a). Although Bush Beryllium (located approximately 8 miles each of the plant site) has the potential for a significant level of emissions, the use of best available control technology makes it an insignificant point source of emissions.

All monitoring sites in rural Utah where particulate concentration measurements were routinely made showed occasional violations of the 24-hour primary NAAQS for particulates (260 $\mu g/m^3$) or the 24-hour secondary NAAQS for particulates (150 $\mu g/m^3$). The high short-term particulate concentrations in rural Utah appear to be caused by natural sources and activities such as agriculture, cattle grazing, and transportation (Hill, et al., 1976). Observed annual mean particulate concentrations in rural Utah, typically about 20 $\mu g/m^3$, are below the primary and secondary annual particulate NAAQS (75 and 60 $\mu g/m^3$).

Hourly sulfur dioxide (SO_2) concentrations at most locations in rural Utah are almost always below the threshold of measurement (26 $\mu g/m^3$). The highest 3-hour and 24-hour average SO_2 concentrations reported by Berman and Baskett (1976) for rural Utah are 156 and 60 $\mu g/m^3$, respectively. Both concentrations, measured in the Warner Valley in southern Utah, are well below the 3-hour and 24-hour NAAQS for SO_2 (1,300 and 365 $\mu g/m^3$). The Warner Valley SO_2 concentrations are relatively high in comparison with the SO_2 concentrations observed at other locations in rural Utah (Bowers, et al., 1978a).

The best available data show no nitrogen dioxide (NO_2) concentration in excess of the annual NAAQS (100 $\mu g/m^3$) has been measured in rural Utah. Typical maximum 24-hour average NO_2 concentrations in rural Utah are 25 to 30

TABLE 8.2-2

Mean Precipitation and Temperature Data
for Selected Utah and Nevada Locations

Location	Climate	Elevation (ft.)	Mean Annual Precipitation (inches)
Milford, UT[a]	Cold Desert	5,028	8.39
Deseret UT[c]	Cold Desert	4,585	7.06
Modena UT[c]	Cold Desert	5,460	8.75
St. George, UT[c]	Hot Desert	2,880	7.81
Las Vegas, NV[b]	Hot Desert	2,162	3.94
Desert Natl. Wildlife Range, NV[b]	Hot Desert	2,920	3.98
Garrison, UT[a]	Mountain	5,275	6.45
Ely, NV[b]	Mountain Valley	6,253	8.71
Caliente, NV[b]	Mountain Valley	4,402	8.71
McGill, NV[b]	Mountain Valley	6,340	8.56
Pioche, NV[b]	Mountain	6,120	13.37
Lehman Caves, NV[b]	Mountain	6,825	13.22
Richfield, UT[c]	Mountain Valley	5,270	7.82
Cedar City, UT[c]	Mountain Valley	5,601	9.97

Source: Personal Communications with E. Arlo Richardson, Utah State Climatologist.

[a]Climatography of the United States No. 86-37. "Climatic Summary of the United States, Supplement for 1951 Through 1960, Utah." U.S. Department of Commerce, Weather Bureau.

[b]"Climatography of the United States No. 20-26." U.S. Department of Commerce, NOAA.

[c]Climatography of the United States No. 60, "Climate of Utah." U.S. Department of Commerce, NOAA. 1977.

$\mu g/m^3$, although somewhat higher values have been measured in the Warner Valley (Bowers, et al., 1978a).

Very few ozone (O_3) concentration measurements have been made in rural Utah. The highest measured hourly O_3 concentration contained in the data (Cramer, 1978) examined for rural Utah is 132 $\mu g/m^3$ at the Salt Wash site. This concentration is about 83 percent of the existing 1-hour NAAQS for O_3 (160 $\mu g/m^3$) and 66 percent of the NAAQS (200 $\mu g/m^3$). Ozone concentrations of this magnitude have been measured in remote areas as a result of thunderstorms. Long-range transport of smog from large urban areas has also been hypothesized as a potential cause of high short-term O_3 concentrations in rural areas (Bowers, et al., 1978a).

Hourly visibility observations, at the Delta, Utah Airport during the period January 1949 through December 1954, were used to establish baseline visibility data in the vicinity of the Lynndyl site (Bowers, 1978). Those data, which were separated by season and period of daylight hours, show that the mean visibility in the Delta area ranged from 35 to 48 miles (56 to 77 km) over the 6-year period (Bowers, 1978). Shortest visibility observations were on winter mornings and the longest were during summer midday periods. Table 8.2-3 shows the mean visibility by season and period of daylight hours along with the range of visibility measurements.

4. Topography, Geology, Mineral Resources, and Paleontology

a. Regional Setting

The Lynndyl alternative site is within the Basin and Range physiographic province. This large province extends westward into Nevada and is about evenly divided between mountains and basins. The mountains rise 3,000 to 5,000 feet above the valley floors (about 7,000 to 10,000 feet above sea level). The mountains, formed by uplifted blocks, consist of crystalline rocks covered by volcanic and sedimentary rock. The valleys are filled with several thousand feet of material eroded from the adjacent mountain ranges. Figure 8.2-3 shows an example of regional topography. Geologic sections, through the region, are shown on Figure 8.2-4.

The geologic formations within the regional setting range from precambrian (over 600 million years old) to recent. They contain plant, invertebrate, and vertebrate fossils which are collected by amateur rock hounds and professional paleontologists. Paleozoic (600 to 225 million years old) formations contain popular collecting sites for trilobites and other invertebrate fossils of interest to paleontologists and rock hounds.

b. Project Area

The project area is located on an ancient lakebed. Depth to bedrock is about 2,550 feet near the center of the south boundary of the alternative Lynndyl power generating station (Dames and Moore, 1979).

Two faults, about 2,500 feet apart, cross in a northeast to southwest direction. The faults are thought to be inactive (Dames and Moore, 1979). The Intermountain Seismic Belt, a zone of pronounced seismic activity along the Wasatch Front, lies about 25 to 50 miles east of the proposed site. Most historic seismic activity in Utah has been located along this zone. The project area has been classified as Zone 3 ("major damage may occur due to an earthquake") under the Uniform Building Code, 1976 (Dames and Moore, 1979).

TABLE 8.2-3

Visibility at Delta, Utah During the Period 1949 through 1954

	Morning[a]		Midday[a]		Late Afternoon[a]	
Season	Mean (mi)	Range (mi)[b]	Mean (mi)	Range (mi)[b]	Mean (mi)	Range (mi)[b]
Winter	35.0	17.7-52.3	36.7	20.2-53.2	36.8	21.6-52.0
Spring	41.4	28.6-54.2	42.4	28.1-56.7	40.0	25.7-54.3
Summer	47.4	38.3-56.5	48.1	37.5-58.7	45.5	34.2-56.8
Fall	43.3	31.5-55.1	44.7	32.6-56.8	42.9	30.6-55.2
Annual	41.8	28.0-55.6	44.2	30.8-57.6	41.4	27.6-55.2

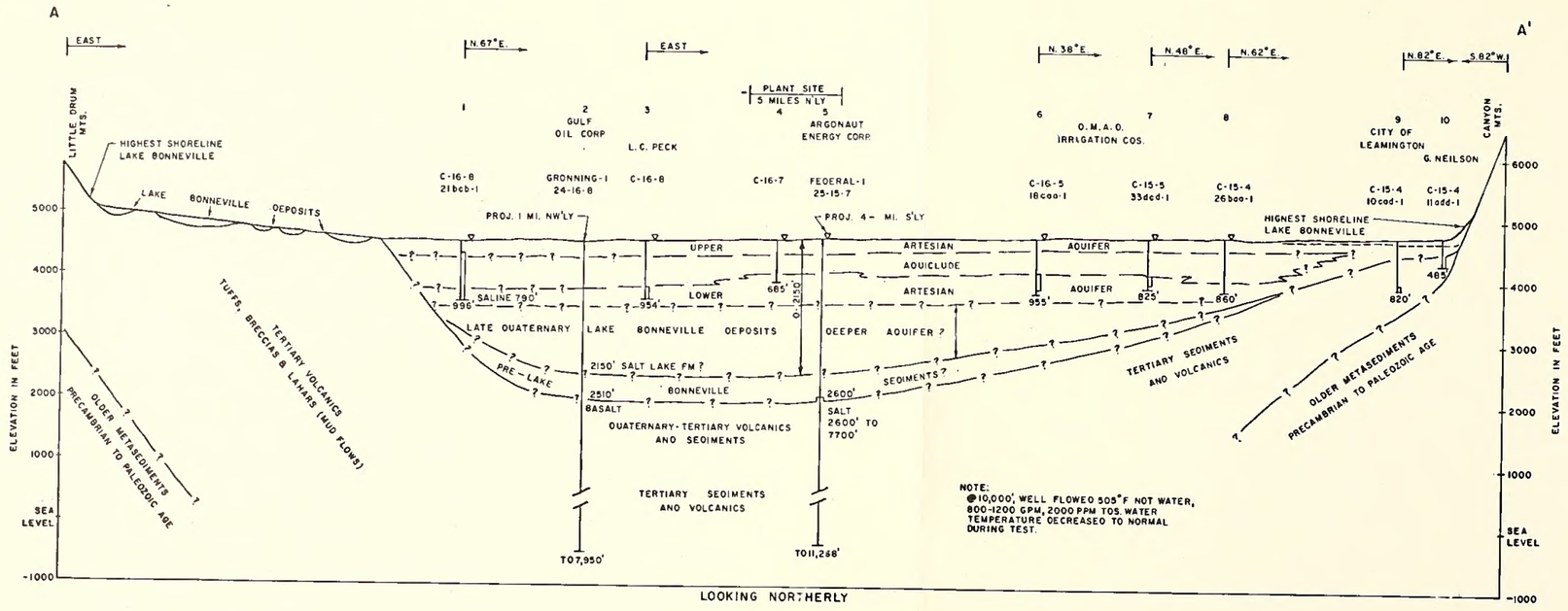
Source: Bowers, 1978.

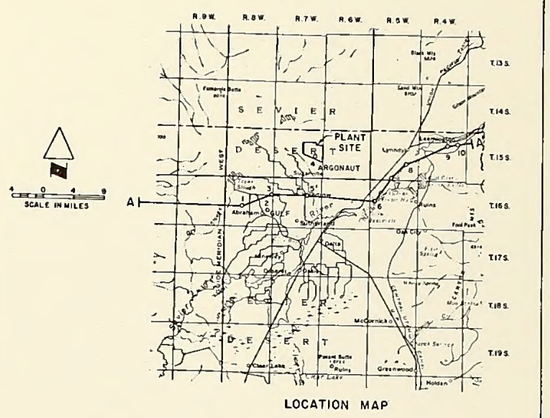
[a]The periods of daylight are: Morning--sunrise to 4 hours after sunrise, Midday--sunrise plus four hours to sunset minus 3 hours, Late Afternoon--3 hours before sunset to sunset.

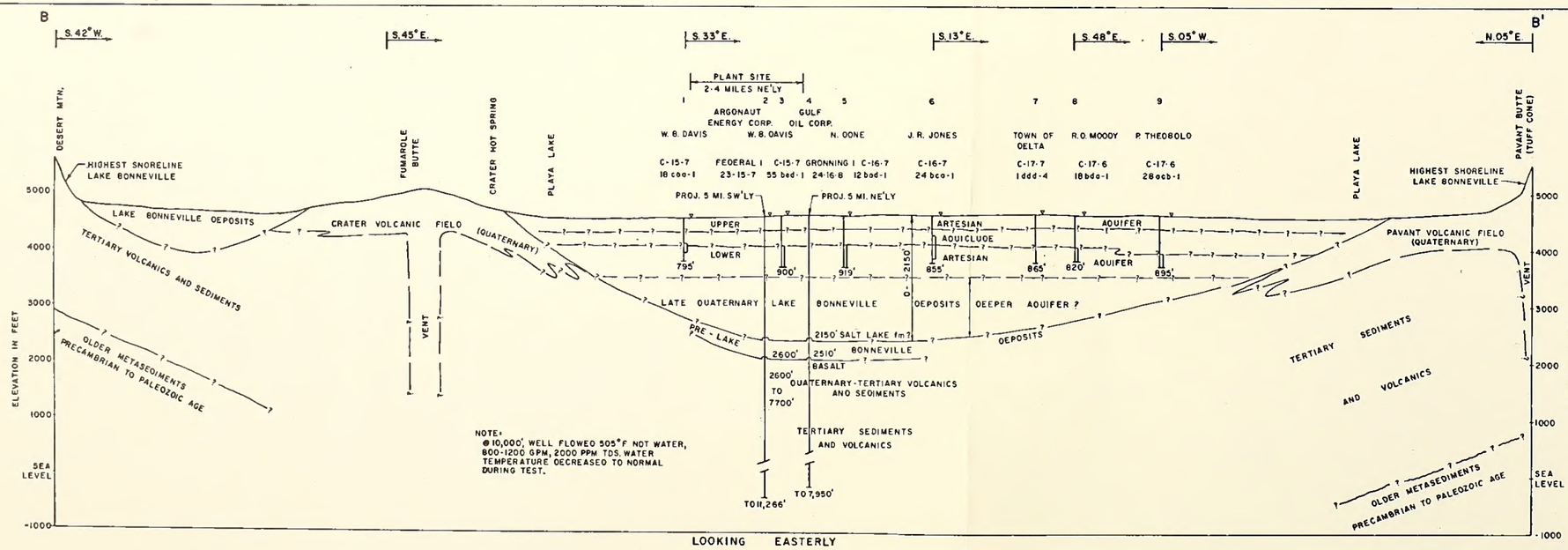
[b]This range is one standard deviation on either side of the mean.

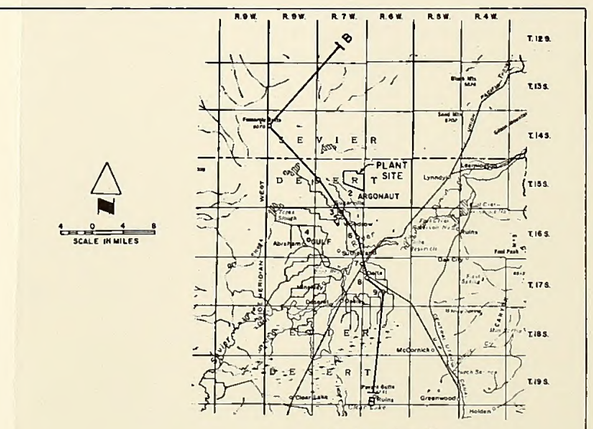
REGIONAL SETTING TOPOGRAPHY

FIGURE 8.2-3









GEOLOGIC SECTION OF SEVIER DESERT

FIGURE 8.2-4

There are no known commercially valuable mineral resources within the plant site and its immediate vicinity (Dames and Moore, 1979). Areas for obtaining borrow materials have been identified on private or leased state land within 30 road miles of the power generating station. These areas have been previously used to obtain rock material or have been included in a construction materials inventory compiled by Utah Division of Highways.

Most of the project area is located on Pleistocene sediments which could contain scientifically valuable vertebrate fossils (fish and Mammals) (Miller and Webb, 1978).

c. Transmission System

Power transmission routes would cross the areas with potential for mineral and energy development shown on Figure 8.2-5. Mining districts which are in the vicinity of power transmission routes are listed in Table 8.2-4. The only potential energy resource areas crossed by transmission routes involve coal and geothermal resources.

The Lynndyl to Toquop Junction route and Paragohah substation to St. George route segments pass through the Harmony coal field in southwestern Utah, however coal along proposed routes occurs in thin, low grade seams, with no present or forseeable future commercial value (Dames and Moore, 1979).

Power transmission routes within a radius of 16 miles of the Lynndyl alternative power generating station are within a potential geothermal resource area (Abraham Hot Springs Area). A segments of the proposed Lynndyl to Toquop Junction transmission route near New Castle, Utah, between Milford and Latimer and between Monroe and Sigurd have potential for geothermal development.

No oil, gas, or uranium development is anticipated along any of the transmission line routes (Dames and Moore, 1979).

All transmission corridors cross geologic formations containing paleontological materials including brachiopods, cephalopods, trilobites, molluscs, fusulinids, and fish, mammal, bird, and reptile fossils (Miller and Webb, 1978). Those formations of potentially high paleontological significant materials are listed in Appendix VIII.2-1.

5. Soils

a. Regional Setting

The soils of the region range from those found on the desert floor to those on mountains. Desert soils are developed in areas having less than 10 inches of annual precipitation while high mountain soils are found in areas having more than 14 inches of annual precipitation (SCS, 1975).

Figure 8.2-6 shows the locations of general soil groups and highly erodable areas in the region. The desert soils, in the valleys, range from slightly to highly saline and from alkaline silty clays to sand dunes. The saline silty clays near Delta are used for agricultural purposes. Sandy soils and salty lake beds, such as Sevier Lake, are moderately susceptible to water erosion and highly susceptible to wind erosion. The remaining soils of the area are only slightly susceptible to wind erosion (Wilson, et al., 1975). Revegetation, on those areas where potential exists, takes up to 30 years.

b. Project Area

The generating station, evaporation ponds, solid waste disposal area, and other support facilities would be located on either sandy loam or silt loam desert soils as shown on Figure 8.2-7.

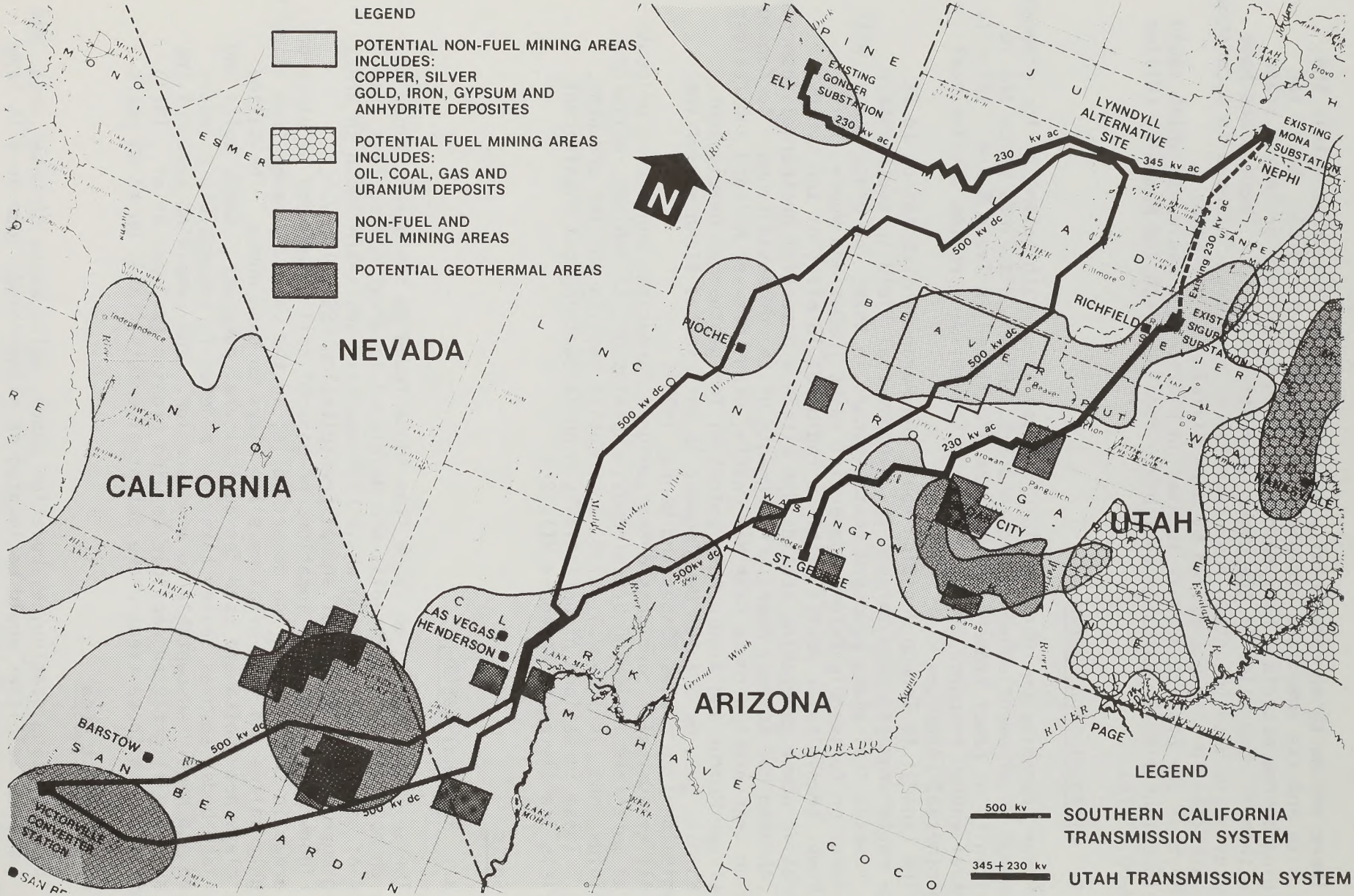


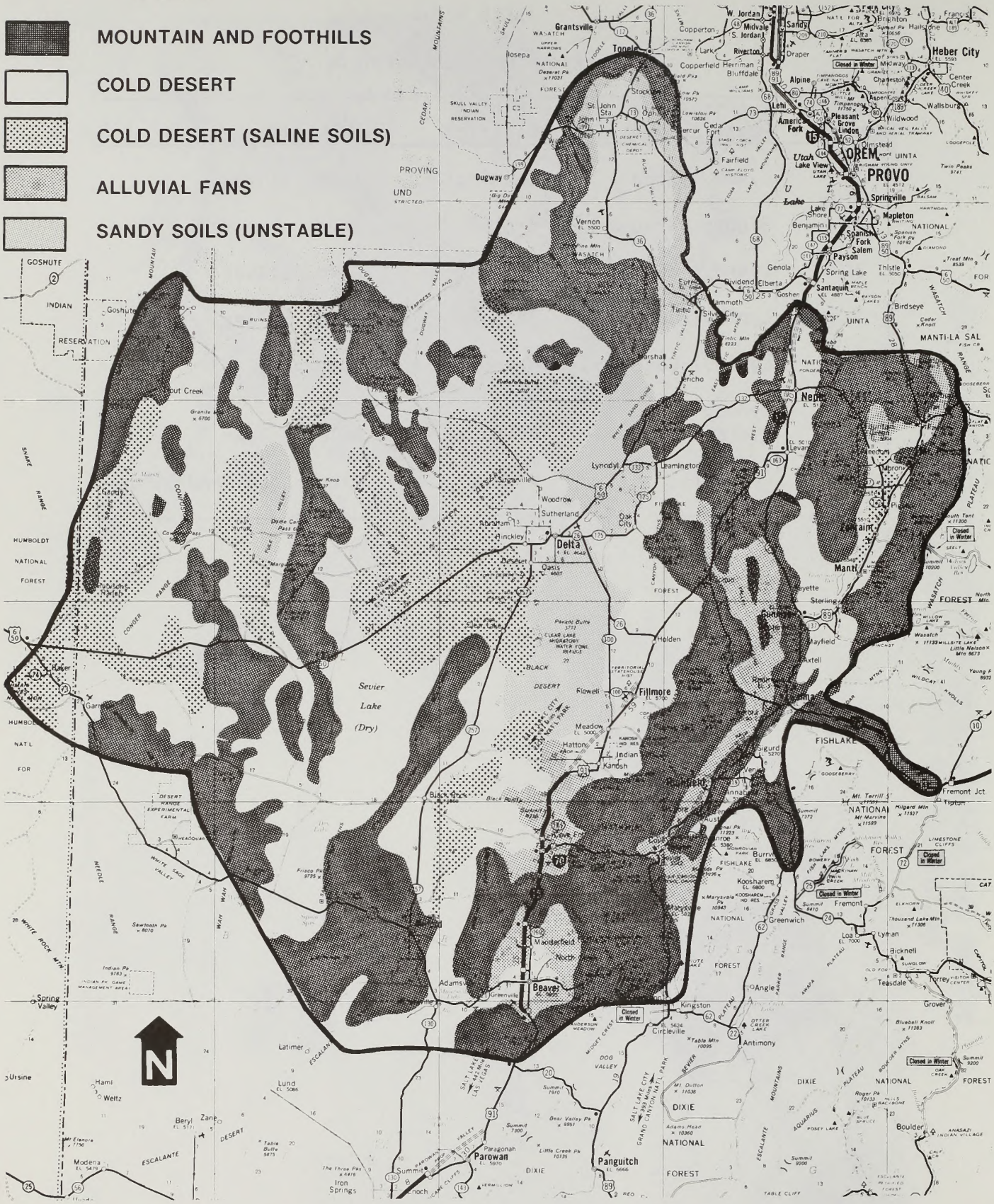
FIGURE 8.2-5

POTENTIALLY VALUABLE MINERAL AREAS ALONG THE POWER TRANSMISSION SYSTEM ROUTES

TABLE 8.2-4

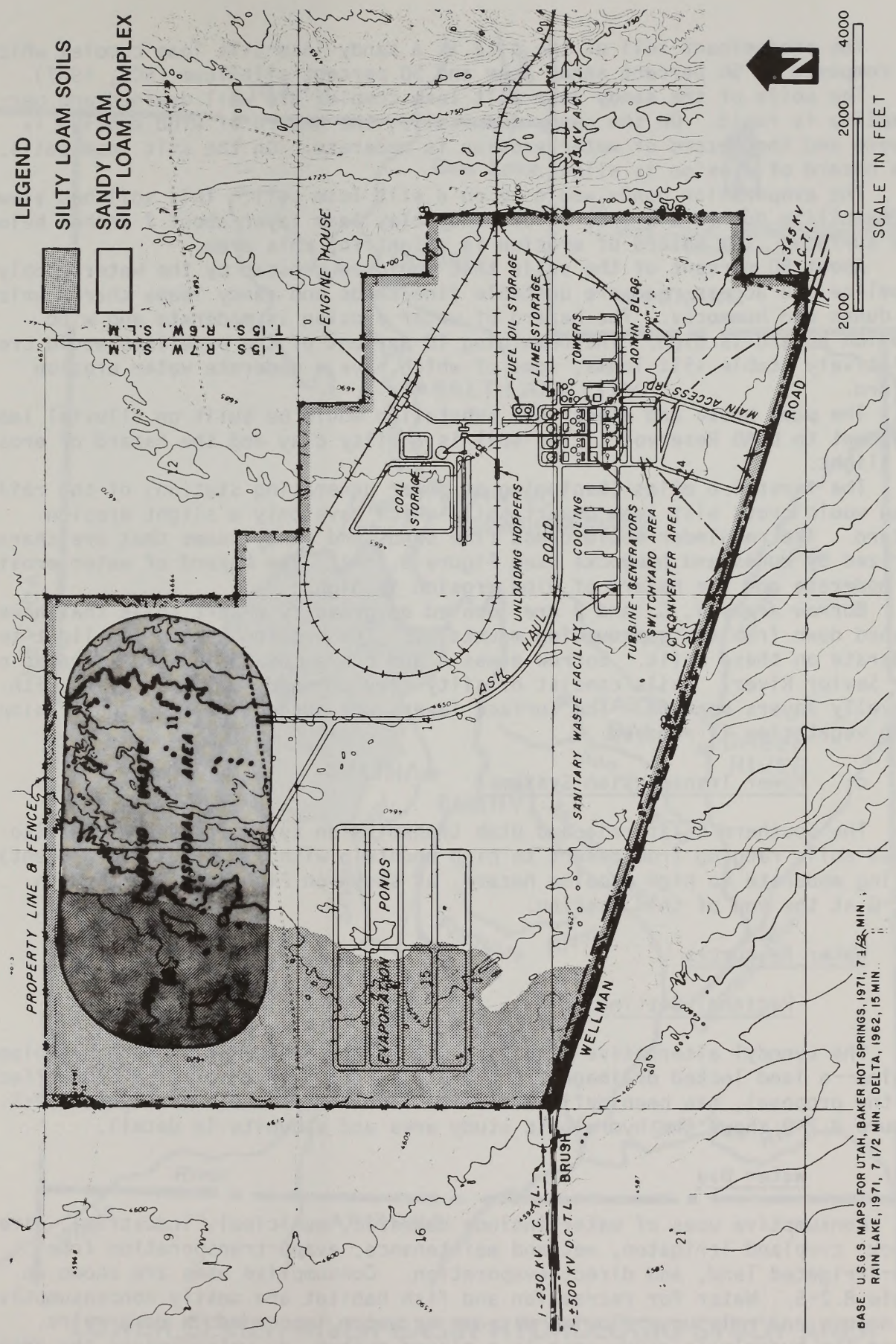
On-Route Mining Districts

Area Number	Transmission Route Segment	Mining District	Commodities
1	Lynndyl-Mona	Leamington	Lead, Silver
2	Sigurd-Paragonah	Krotki	Iron
3	Lynndyl-Gonder	Osceola	Gold, Silver
4.	Lynndyl-Gonder	Taylor	Gold, Silver
5.	Lynndyl-Gonder	Nevada	Manganese
6.	Lynndyl-Victorville	Atlanta	Gold, Silver
7.	Lynndyl-	Pioche	Zinc, Lead, and Silver



SOIL TYPES IN THE REGIONAL SETTING

FIGURE 8.2-6



SOILS AT PLANT SITE

FIGURE 8.2-7

The predominant soil at the site is a sandy loam-silt loam complex which is composed of 50 percent sandy loam and 50 percent silt loam (SCS, 1977).

The soils of the sandy loam-silt loam complex are well drained and permeabilty is rapid. On the sandy loam soils, the hazard of wind erosion is severe and the hazard of water erosion is moderate. On the silt loam soils, the hazard of erosion is slight.

The evaporation ponds would be on a silt loam soil. This soil has slow permeability due to a 9-inch thick sandy clay loam layer about 2 inches below the surface. The hazard of erosion is slight for this area.

About 90 percent of the soils that would be crossed by the water supply pipeline and access road are unstable fine sands and sandy loams characterized by dunes and hummocks. The hazard of water erosion is moderate and wind erosion hazard is high. The remaining 10 percent of the pipelines would cross relatively stable silt loams, some of which have a moderate water erosion hazard.

The pump house and electrical substation would be built on alluvial land adjacent to DMAD Reservoir. The soil is a silty clay and the hazard of erosion is slight.

The first 0.6 miles (beginning at power generating station) of the railroad would cross silt loam desert soils which have only a slight erosion hazard. The remainder would cross fine sands and sandy loams that are characterized by dunes and hummocks (see Figure 8.2-A). The hazard of water erosion is moderate and the hazard of wind erosion is high.

Borrow areas B, C, and D are located on gravelly desert soils that have washed down from the surrounding mountains. The erosion hazard is slight to moderate on these soils. Borrow areas A and E are located on old terraces of the Sevier River. Soils consist of silty clay or sandy surface layers with gravelly layers beneath. The surface layers are susceptible to wind erosion when vegetation is removed.

c. Power Transmission Systems

The Southern California and Utah transmission system routes would also cross soils ranging from desert to high mountain with 125 miles (10 percent) having moderate to high erosion hazard, as shown on Figures 8.2-B through 8.2-G at the end of this section.

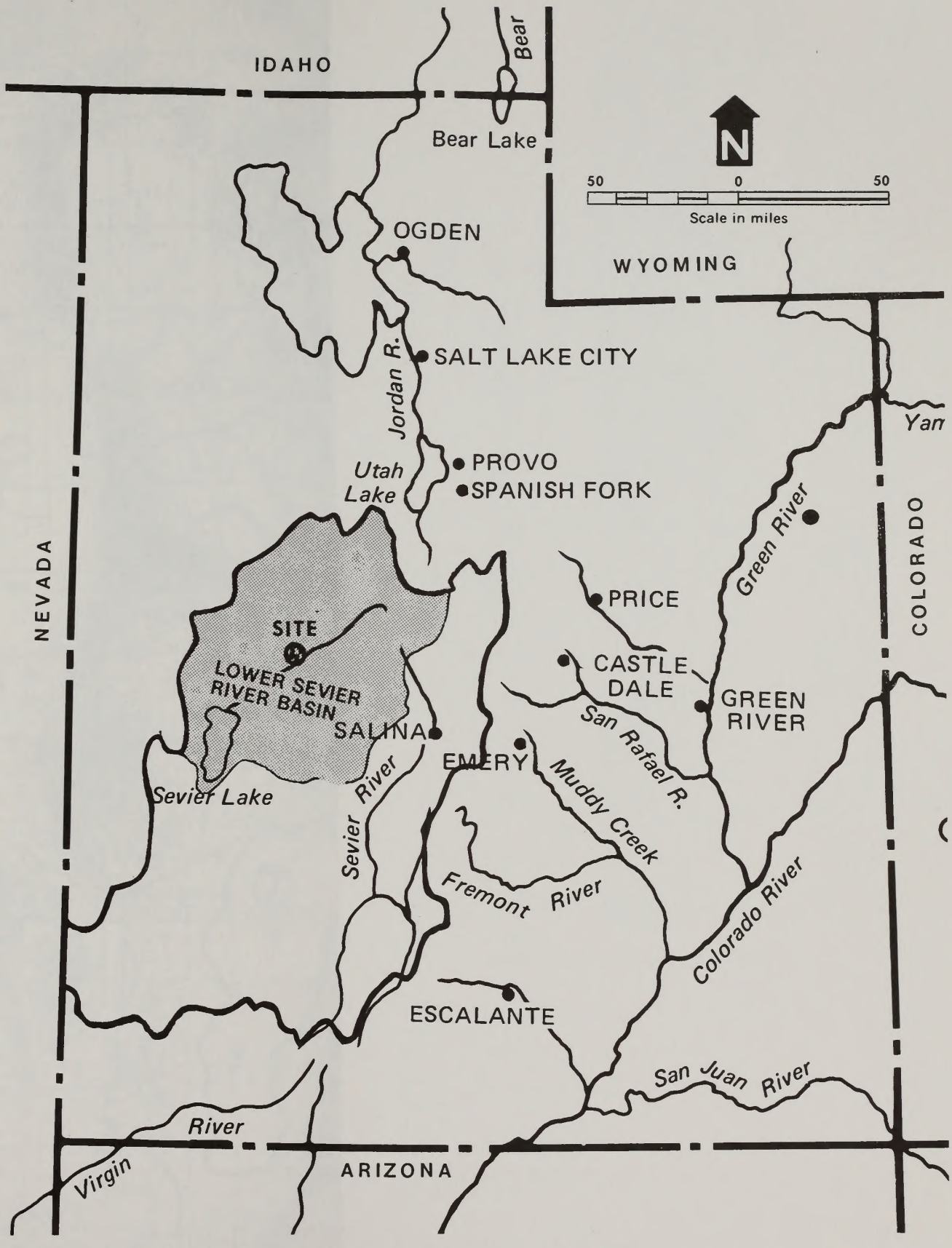
6. Water Resources

Regional Setting

The Lynndyl alternative site lies within the Sevier Lake Basin Hydrologic region--a land locked drainage. A hydrologic study area, likely to be affected by the proposal, has been defined and its location is shown on Figure 8.2-8. Figure 8.2-9 shows the hydrologic study area and subunits in detail.

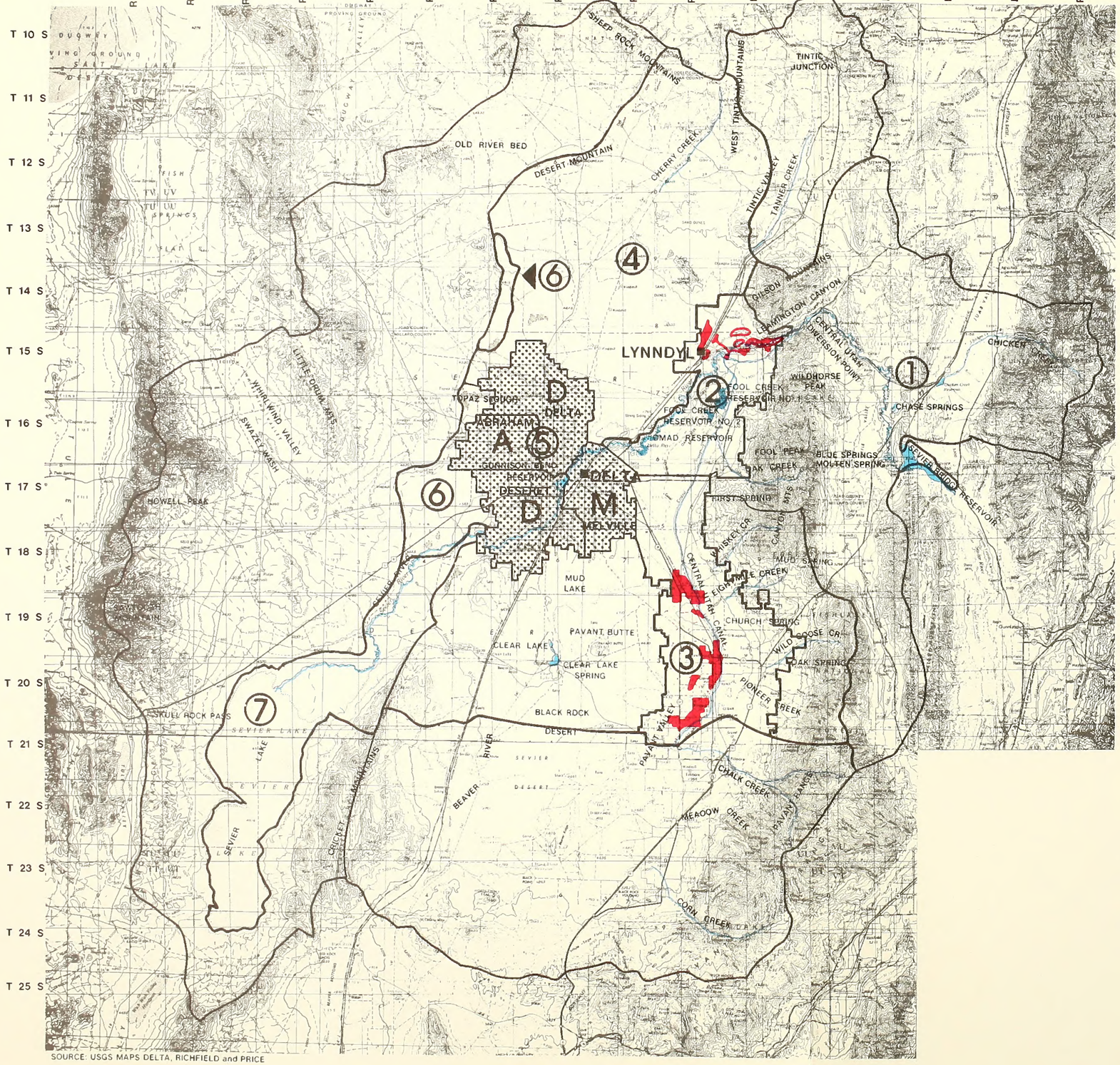
Water Use

Consumptive uses of water include domestic, municipal, industrial, livestock, cropland irrigaton, wetland maintenance, evapo-transporation from non-irrigated land, and direct evaporation. Consumptive uses are shown on Table 8.2-5. Water for recreation and fish habitat are mostly nonconsumptive in nature and rely upon flowing streams or water impounded in reservoirs. Since the hydrologic study area is a closed system, no water leaves the area, except through consumptive uses.



LOWER SEVIER RIVER BASIN HYDROLOGIC STUDY AREA

FIGURE 8.2-8



SOURCE: USGS MAPS DELTA, RICHFIELD and PRICE

LEGEND

HYDROLOGIC UNITS AFFECTED BY PROJECT

1. SEVIER BRIDGE-LEAMINGTON CANYON
2. OAK CITY-LYNNDYL-LEAMINGTON
3. NORTH PAVANT VALLEY
4. DMAD
5. NORTH LOWLANDS-CHERRY CREEK
6. WETLAND FRINGE
7. SOUTH LOWLANDS-SEVIER LAKE

BASIN BOUNDARIES

CENTRAL UTAH CANAL LANDS

LEAMINGTON

McINTYRE IRRIGATION COMPANY

DELTA

MELVILLE

ABRAHAM

DESERET

GENERAL HYDROLOGIC FEATURES

FIGURE 8.2-9

TABLE 8.2-5

Consumptive Use of Water By Hydrologic Subunits

Hydrologic Subunit	Evapo-transporation	Reservoir Evaporation	Irrigation	Domestic, Municipal, Industrial Uses	Total
1. Sevier Bridge-Leamington Canyon	557.3	35.9[a]	27.3	0.7	621.2
2. Oak City-Lynndyl-Leamington	70.2	10.1[b]	22.3	0.5	103.1
3. North Pavant Valley	185.9	--	14.4	0.3	200.6
4. DMAD	113.9	3.3[c]	85.6	1.1	203.9
5. North Lowlands-Cherry Creek	256.5	--	--	--	256.5
6. Wetland Fringe	270.3	--	--	--	270.3
7. South Lowlands-Sevier Lake	191.4	--	--	--	191.4
Totals	1,645.5	49.3	149.6	2.6	1,847.0

[a]Sevier Reservoir

[b]Fool Creek 5.3 and DMAD Reservoir 4.8.

[c]Gunnison Bend Reservoir.

Domestic, municipal, and industrial water is obtained either from ground water or springs. Irrigation water is diverted from the Sevier River or small tributary streams and pumped from the ground water basins. Wetlands occur along the Sevier River, creeks, canals, ditches, and reservoirs. Irrigation water return flows and natural discharge from ground water also create wetlands in the study area.

Springs

Clear Lake Springs, approximately 15 miles northwest of Flowell, Utah, are the source of water for the Clear Lake Waterfowl Management Area. The discharge of the springs varies through an annual cycle with a recorded range of 9,400 to 18,000 acre/ft per year. Variation in discharge is due to an interrelationship among the basalt aquifer, pumping and recharging of ground water in Pavant Valley, and precipitation (Mower, 1967).

Molten and Blue Springs feed the Sevier River about 2 miles downstream from the Sevier Bridge Reservoir and Chase Springs feed the river about 7 miles downstream of the reservoir. These springs discharge a total of approximately 21,700 acre-feet during an average year.

Approximately 3 or 4 miles west of Greenwood in the Pavant Valley are several small springs or seeps with unknown discharge rates. Five miles west of McCornick is Mud Lake Spring. There are no records of discharge rates for this spring. Water for the spring originates as underflow from the east or southeast in the Pavant Valley.

Tributaries

While small in volume compared to Sevier River flows, other streams within the study area supply substantial amounts of water for agricultural use. These perennial, intermittent, and ephemeral streams provide recharge to basin ground water aquifers. Most flows are unknown.

Sevier River

Most of the water supply to the hydrologic study area is from the Sevier River. Its inflow into the hydrologic study area originates as runoff from approximately 43,000 square miles of drainage above the Sevier Bridge Reservoir (see Figure 8.2-9). A flow diagram, shown on Figure 8.2-10, describes the Lower Sevier River system.

The Sevier River flows in cycles of high and low flow in successive years as shown on Figure 8.2-11. The 236,000 acre-foot Sevier Bridge Reservoir helps stabilize the yearly supply below the reservoir. During the winter, water is impounded and about mid-April, just prior to the start of the irrigation season, the reservoir reaches its highest seasonal level. During the irrigation season, releases from Sevier Bridge Reservoir supply most downstream irrigation demands and the level drops until these demands are reduced, usually in September.

Additional water enters the river below this reservoir from springs, seeps, intermittent streams, and irrigation return flows. No perennial tributary streams feed the Sevier River within the basin.

Winter flows and high March and April flows into the Sevier River, below Sevier Bridge Reservoir, are diverted in Leamington Canyon to the offstream Fool Creek Reservoirs, which have a combined capacity of 10,000 acre-feet. The stored water is released back to the Sevier River just upstream of the

LEGEND

FIGURES 1,000 ACRE FEET

HYDROLOGIC UNITS AFFECTED BY PROJECT

1. SEVIER BRIDGE-LEAMINGTON CANYON
2. OAK CITY-LYNNDYL-LEAMINGTON
3. NORTH PAVANT VALLEY
4. DMAD
5. NORTH LOWLANDS-CHERRY CREEK
6. WETLAND FRINGE
7. SOUTH LOWLANDS-SEVIER LAKE

BASIN BOUNDARIES

SURFACE WATER

INDICATES CONSUMPTIVE USE IN STREAMS, RESERVOIR OR LAKES

GROUND WATER MOVEMENT AND ESTIMATED QUANTITIES CROSSING PARTICULAR BOUNDARY

DRAINAGE WATER

SEVIER RIVER

RESERVOIR WITH ESTIMATED EVAPORATION LOSS (C.U.)

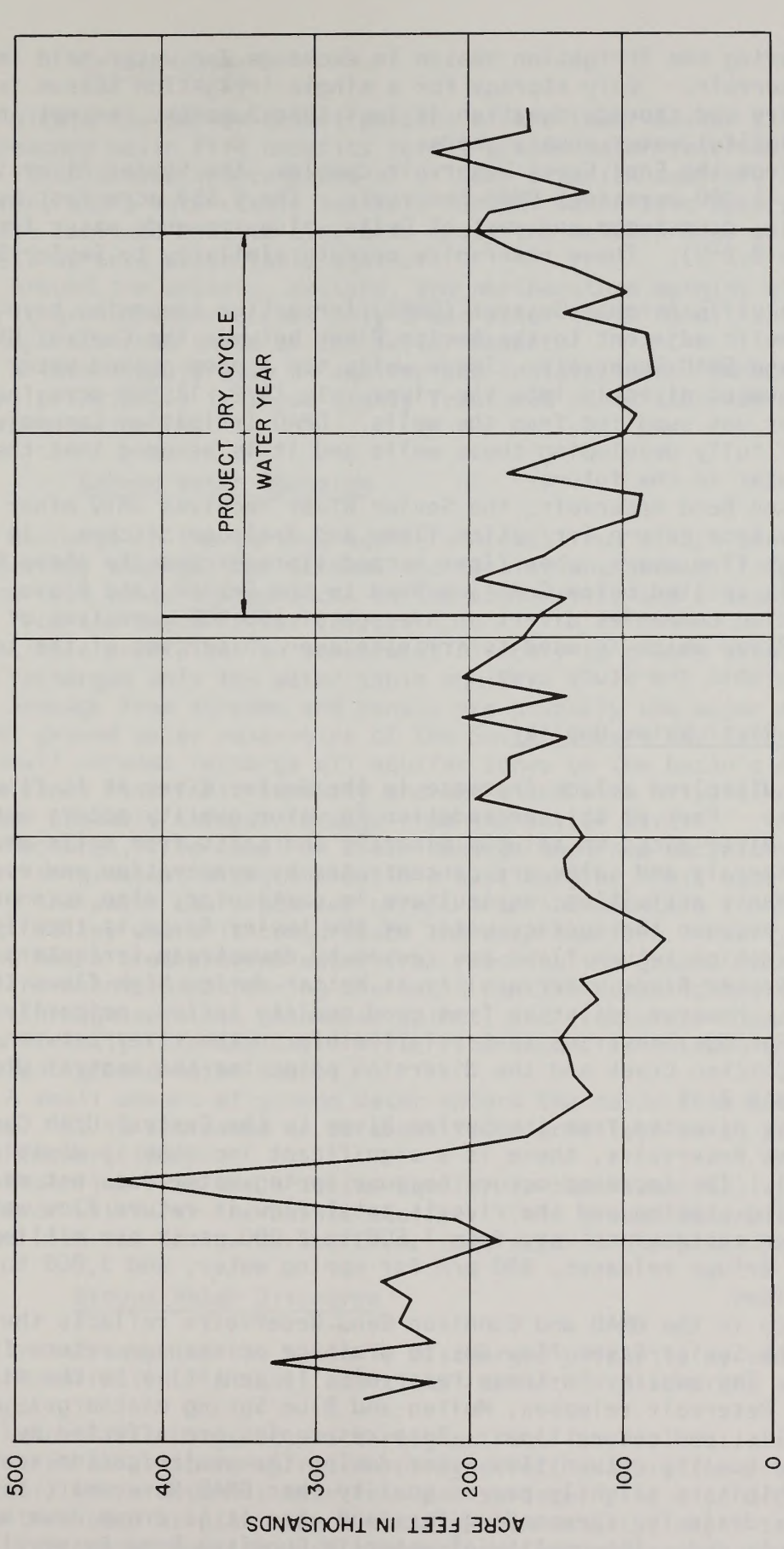
INDICATES WATER LOST BY SEEPAGE AND MOVING TO GROUND WATER

INDICATES QUANTITY OF INSTREAM FLOW AT THIS POINT

DMAD WELLS PUMPED INTO SEVIER RIVER

LOWER SEVIER RIVER BASIN

FIGURE 8.2-10



SEVIER RIVER FLOWS 1910 TO 1976

SEVIER RIVER NEAR JUAB, UTAH
U.S.G.S. GAGE NO. 10222000

FIGURE 8.2-11

DMAD Reservoir during the irrigation season in exchange for water held in Sevier Bridge Reservoir. Only storage for a single irrigation season is held in these reservoirs and storage duration is less than 3 months, except in exceptionally plentiful water supply years.

Downstream from the Fool Creek Reservoir complex, the Sevier River is impounded in the 11,000 acre-foot DMAD Reservoir. The 4,550 acre-foot Gunnison Bend Reservoir, downstream and west of Delta, also impounds water from the river (see Figure 8.2-9). These reservoirs operate similarly to Sevier Bridge Reservoir.

The Delta-Melville-Abraham-Deseret (DMAD) irrigation companies have developed eight wells adjacent to the Sevier River between the Central Utah Canal diversion and DMAD Reservoir. These wells tap a deep ground water aquifer and are pumped directly into the river. In 1972, 14,200 acre-feet of high quality water was supplied from the wells. DMAD Irrigation Companies are in the process of fully developing these wells and it is assumed that they will pump more water in the future.

Below Gunnison Bend Reservoir, the Sevier River receives only minor flows which come mainly from return irrigation flows and drainage ditches. In exceptionally high flow years, when flows exceed storage capacity above Gunnison Bend, water is spilled below Gunnison Bend to the Sevier Lake Playa.

Nine irrigation companies divert an average of 165,000 acre-feet of water from the Sevier River which is used to irrigate over 70 percent of the total irrigated acres within the study area.

Sevier River Water Quality

In general, dissolved solids increase in the Sevier River as it flows toward Sevier Lake. Part of this degradation in water quality occurs naturally because the river picks up soluble minerals and salts from soils and rocks, and the minerals and salts are concentrated by evaporation and evapotranspiration. Man's activities, agriculture in particular, also account for much degradation because the surface water of the Sevier River is totally diverted and irrigation return flows are reused by downstream irrigators.

Generally, Sevier River water quality is better during high flows than during low flows. However, dilution from good quality inflow, primarily from Molten and Blue Springs, reverses that relationship in the river between its confluence with Chicken Creek and the diversion point for the Central Utah Canal (see Figure 8.2-9).

When water is diverted from the Sevier River to the Central Utah Canal and the Fool Creek Reservoirs, there is a significant increase in dissolved solids at Lynndyl. The increase occurs because spring water does not reach the Lynndyl gauging station and the river's total flow is return flow water. Dissolved solid concentrations vary from 1,500 to 2,000 parts per million (p/m) for Sevier Bridge releases, 400 p/m for spring water, and 3,000 to 6,000 p/m for return flows.

Water quality in the DMAD and Gunnison Bend Reservoirs reflects the degradation of the Sevier River flow due to drainage or seepage return from irrigated lands. The quality in these reservoirs is sensitive to the mixing of Sevier Bridge Reservoir releases, Molten and Blue Spring discharges, pumping from deep wells, and return flows. Both reservoirs are affected by the storage of poorer quality return flow water during the nonirrigation season. Gunnison Bend exhibits a slightly poorer quality than DMAD Reservoir, because it functions as a drain for surrounding farmland when it is drawn down at the irrigation season's end. The quality of water in Gunnison Bend Reservoir degrades to approximately 2,000 p/m total dissolved solids.

Ground Water

Within the Sevier Desert portion of the Lower Sevier River Basin, the interbedded basin fill deposits form a ground water reservoir exceeding 1,000 feet in thickness and composed of a lower artesian aquifer, an upper artesian aquifer, and a water table aquifer. Ground water also occurs in an artesian aquifer confined beneath clay beds along the western edge of the Pavant Valley as well as in a water table aquifer.

Around the western, eastern, and northeastern margins of the Sevier Desert, ground water occurs only under water table conditions and the aquifers are separate from those of the Sevier Desert.

A lava flow is also an aquifer and contains much unconfined ground water, principally in those highly fractured zones that are not filled with lake-bed sediments.

Ground Water Recharge

Recharge to the various aquifers occurs from direct penetration of precipitation; seepage from streams and canals; unconsumed irrigation water; inflow from consolidated rocks to the basin fill; and a minor amount of underflow from the Beaver River valley.

Little precipitation penetrates directly to ground water. That which does recharges only the water table aquifer.

Seepage from streams and canals are probably the major source of recharge to the ground water reservoirs of the Sevier Desert and Pavant Valley. Numerous small streams recharge all aquifer zones on the basin's margins where these zones lose their identity and are mixed with alluvial deposits. Stream seepage probably exceeds seepage from the Sevier River.

Recharge, from canal or ditch seepage and from unconsumed irrigation water, is greatest along the basin's east margin. This water recharges primarily the water table aquifer except near the mountain fronts and in the Pavant Valley where it could reach the deep aquifers. Poorly draining soils in the Delta area prevent water from reaching the ground water reservoirs.

The mountains bordering the basin contain consolidated rocks that transmit water through solution channels, joints, and fractures. Some of this water moves directly into the basin fill. The amount is unknown and it may be am important ground water source.

A small amount of ground water enters the basin from the Beaver River valley. It is estimated to be about 1,000 acre-feet on an average annual basis (Mower, 1967).

Underflow from the artesian aquifer in the Pavant Valley is the main source of water for the basalt aquifer. This ground water is in turn connected with the inflow to the Clear Lake area in the Black Rock Desert.

Ground Water Discharge

Ground water of the basin is discharged primarily by wells, evaporation, and transpiration. A small additional amount is discharged as seeps and springs.

Natural discharge occurs throughout the lower elevations of the hydrologic study area as evapotranspiration or by direct evaporation from open water and bare soil where water is near the land surface. The discharge rate is governed by factors such as plant species and growth density, depth to water table, soil type, water quality, air temperatures and movement, and humidity. Water

moving to the Sevier Lake Playa, and not remaining in ground water storage, is then consumed by direct evaporation.

The amount of water discharged by withdrawal through wells has greatly increased during the last 30 years or more. This has resulted in declining water levels, from 4 to 7 feet, in areas of well concentration.

Ground Water Quality

Ground water quality in the Sevier Desert varies widely with dissolved solids ranging from 195 to 6,360 p/m. It is characterized as predominantly low sodium hazard and medium to high salinity hazard. Generally, ground water close to recharge areas is of better quality. Ground water is also generally of better quality in the lower artesian aquifer.

In the Pavant Valley, dissolved solids in the water contained in the sand and gravel aquifers increases as the distance from the mountains increases. Dissolved solids range from about 300 p/m to 4,300 p/m. Total dissolved solids in water in the basalt aquifer, west of Pavant Valley, ranges from a low of about 570 p/m in the north, to 4,500 p/m in the basalt underlying the area west of the Black Rock Volcano. Water from wells nearest the recharge areas is classified as low sodium hazard--medium salinity hazard. This situation is now changing in the Delta area. The body of relatively fresh ground water that was derived from recharge before irrigation is slowly being replaced by more saline recharge water from irrigation return flows. Under present conditions, water of 1,000 p/m dissolved solids could be expected to reach the Delta area in 100 to 140 years (Mower, 1967).

Project Area

No surface water occurs within the plant site. It is assumed that ground water occurs in the area and that recharge is primarily from Cherry Creek, Tanner Creek, possibly from the Sevier River, and from irrigation return flows near Lynndyl. Amounts of ground water are unknown.

Power Transmission systems

Transmission lines would cross the perennial streams and reservoirs listed on Table 8.2-6. Locations are shown on the environmental profiles, Figures 8.2-B through 8.2-G following this section.

7. Vegetation

a. Regional Setting

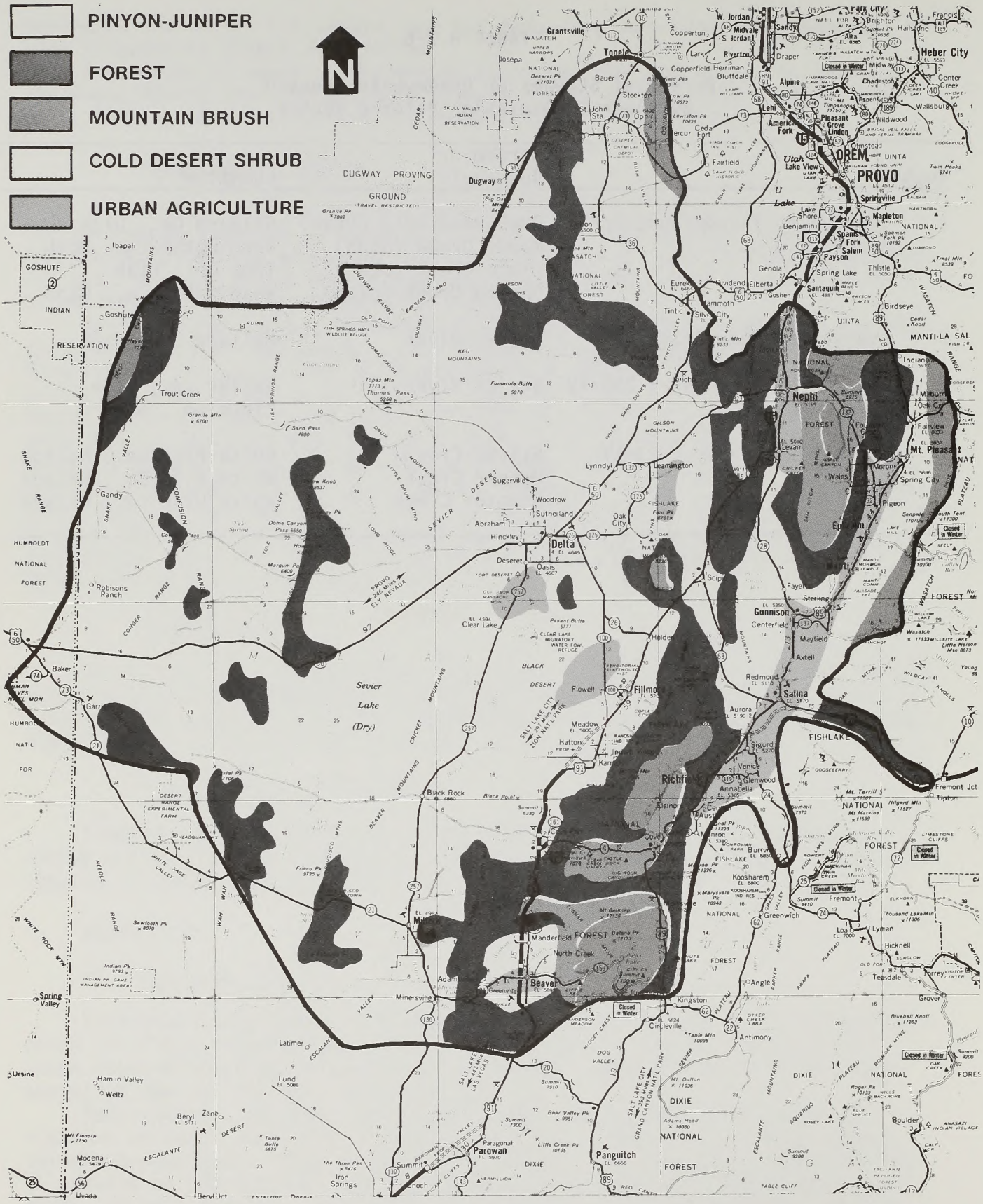
Cold desert vegetation predominates in the regional setting, but mountain brush and forest vegetation both occur at higher altitudes. Figure 8.2-12 shows vegetation types in the regional setting. Appendix II-11 lists representative species of each vegetation type.

Most streams, springs, seeps, and canals (see Figure 8.2-9) support riparian or marsh vegetation. Appendix VIII.2-2 lists plant species associated with wetlands. Many of these species are salt tolerant. Approximately 75 percent of the wetlands are predominately vegetated with greasewood, saltgrass, or both species. Bulrushes are found in all of the wetlands, except Swan Lake, and are most plentiful at Topaz Slough and at the ends of the irrigation drains in the Mud Lake vicinity. Pondweed grow in all of the permanent bodies of water associated with the wetlands.

TABLE 8.2-6

Perennial Streams or Reservoirs Crossed
By Power Transmission Pefered Routes

Routes	Stream or Reservoir	Location
1. Lynndyl to Toquop Junction 1-500-kV d.c.	DMAD Reservoir (Utah)	Millard Co., Utah
	Moody Creek (Utah)	Washington Co., Utah
	Pinto Creek (Utah)	Iron Co., Utah
	Spring Creek (Utah)	Washington Co., Utah
2. Lynndyl to Mona 2-345-kV	Sevier River	Millard Co., Utah
3. Sigurd to Paragonah 1-230-kV	Sevier River	Sevier Co., Utah
		Piute Co., Utah
4. Lynndyl to Gonder 1-23-kV	Silver Creek	White Pine Co., Nevada
	Weaver Creek	White Pine Co., Nevada
	Steptoe Creek	White Pine Co., Nevada



VEGETATION TYPES IN THE REGIONAL SETTING

FIGURE 8.2-12

According to herbarium and field searches conducted by Dr. Stanley Welsh, 23 threatened or endangered plant species occur within the Lynndyl regional setting. Appendix VIII.2-3 lists those plants known to occur in the regional setting. One of these has been officially listed as threatened by the U.S. Fish and Wildlife Service. Five are proposed endangered (Federal Register, June 16, 1976). One is a candidate endangered species and 16 are candidate threatened species. The status of proposed and candidate threatened and endangered plant secies is being evaluated and they may be officially listed or removed from consideration.

b. Project Area

The Lynndyl site supports cold desert vegetation, largely shadscale. Cold desert vegetation also occurs at the five proposed borrow areas and about 10 acres of alfalfa is growing at borrow area A. All of the proposed borrow areas have been previously disturbed. Figure 8.2-A shows vegetation along the proposed railroad spur and the proposed water supply pipeline.

Literature reviews and on-site investigations do not show any candidate or proposed threatened or endangered plant species at the proposed power generating station site, along the railroad route, or along the water pipeline route (Welsh, 1978a). Investigations for candidate or proposed threatened and endangered species have not been conducted at the borrow areas.

c. Power Transmission Systems

The transmission systems would cross cold desert shrub, pinyon-juniper, agricultural, and hot desert vegetation (see Figures 8.2-B through 8.2-G).

Appendix VIII.2-10 and 11 lists proposed endangered plant species which occur within about 2.5 miles of transmission routes for each state affected.

8. Animal Life

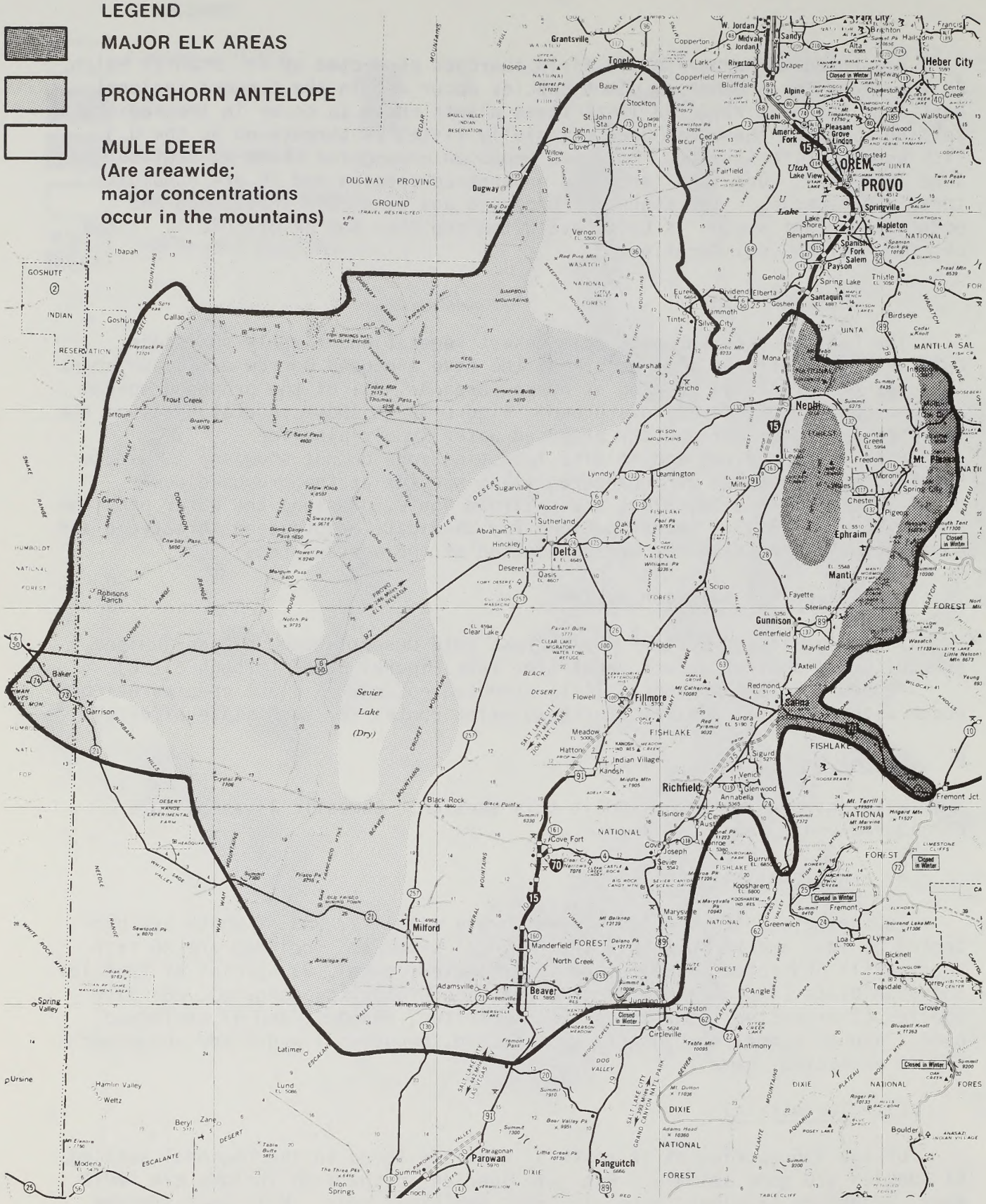
Wild animals are discussed in this section. Domestic livestock are considered under land use.

a. Regional Setting

Approximately 424 species of vertebrate wildlife, 323 of which are protected by law, are found within the regional setting. Included are 26 fish species (12 protected, nongame and 14 protected, game), 29 species of reptiles and amphibians (1 protected, nongame and 28 unprotected, nongame), 283 bird species (2 protected, endangered; 234 protected, nongame; and 47 protected, game), and 86 mammal species (71 unprotected, nongame; 1 protected, nongame; and 14 protected, game).

(1) Terrestrial

Of the 396 species of terrestrial wildlife found in the regional setting, 61 species are game animals. Big game species in the area include elk, mule deer, pronghorn antelope, mountain lion, and black bear. Mule deer are the most abundant big game species found in the region. Pronghorn antelope, though not abundant, are widespread west of Delta, Utah. Mountain lion and black bear are found in small numbers, generally at higher elevations. Figure 8.2-13 shows big game distribution.



GENERAL DISTRIBUTION OF BIG GAME SPECIES WITHIN THE REGION

FIGURE 8.2-13

Major upland game species include chukar partridge, ring-neck pheasant, ruffed grouse, blue grouse, sage grouse, California and Gambel quail, mourning dove, band-tailed pigeon, cottontail rabbit, and snowshoe hare. Ring-necked pheasants are dependent on the agricultural lands of the region. In desert areas, upland game species are often concentrated around water sources. Figure 8.2-14 shows upland game distribution.

Many waterfowl nest in the region, but most waterfowl use is during spring and fall migration. Figure 8.2-15 shows the major waterfowl use areas. The areas have been classified by the Utah Division of Wildlife Resources according to their importance to waterfowl. DMAD and Gunnison Bend Reservoirs are classed as important to migrating waterfowl. Clear Lake is classed as a 1st magnitude marsh which is important for waterfowl reproduction, migration, and wintering. Topaz Slough is a 2nd magnitude marsh which is beneficial to waterfowl during the spring and early summer period of each year. All other areas are classed as incidental waterfowl habitat because they contain water only in extremely wet years (Jensen, 1974).

A spring census conducted on Fool Creek Reservoirs, shown on Figure 8.2-16 found over 2,000 waterfowl present. Most of these were migrant birds (Jensen, 1974). A summer census of six of the intermittant lakes associated with irrigation in a wet year in the Delta area showed an approximate average of 110 waterfowl and 175 other marsh associated birds present at each lake. Most of these probably were breeding birds (Farnsworth, 1978).

Predatory and fur-bearing mammals are widely distributed throughout the region and include: coyote, fox, bobcat, badgers, skunks, beaver, and muskrat. No areas of concentration have been identified for these species.

Raptors are wide-spread throughout the region. Many raptor nesting areas are located in the mountain ranges of the West Desert of Utah. Golden eagles, red-tailed and ferruginous hawks, and prairie falcons are the most common nesting species.

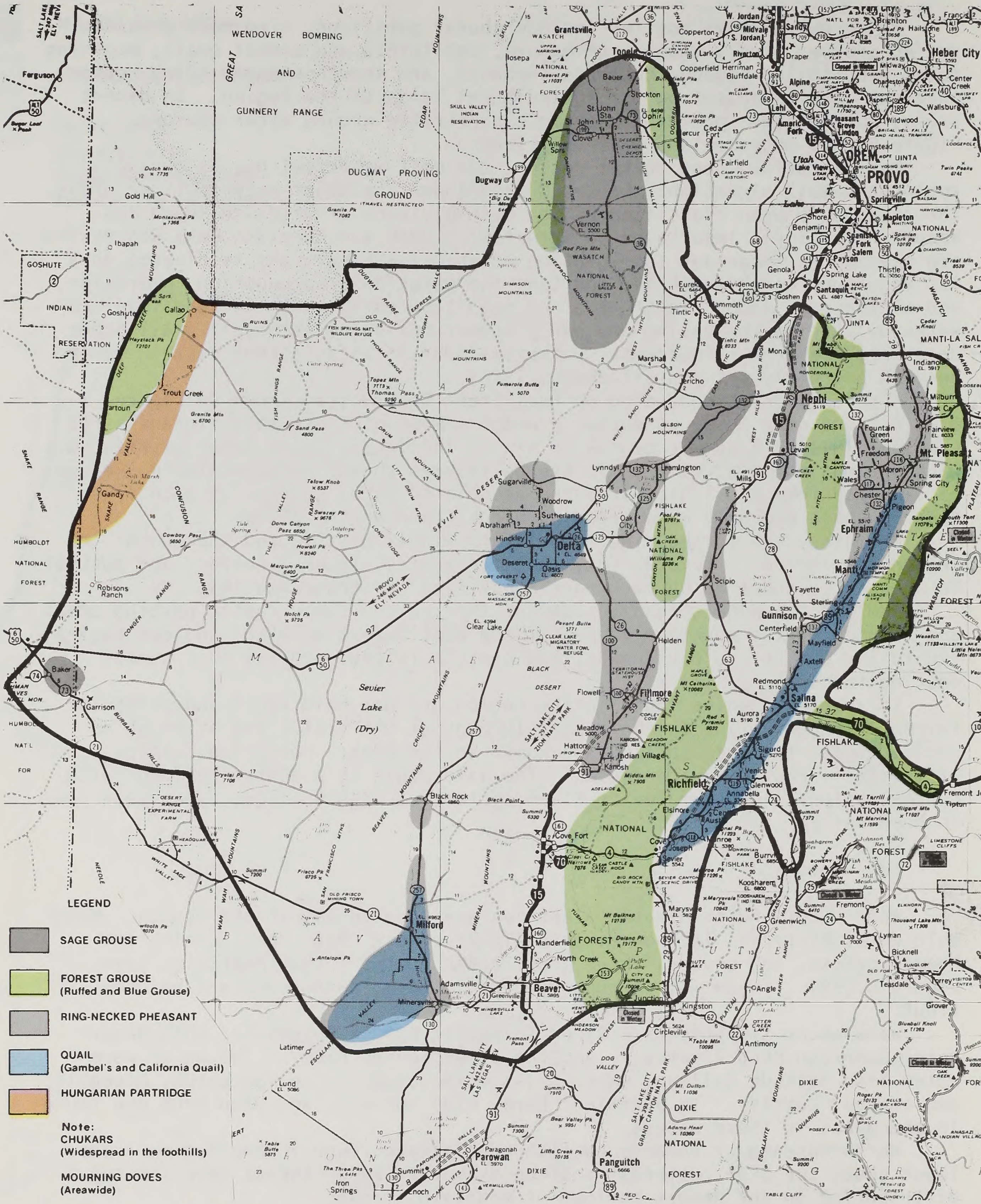
Endangered species found in the region are the bald eagle and peregrine falcon. The peregrine falcon ranges throughout the region and although no active eyries for this species are known in the area. Peregrine falcons historically nested in the region. The bald eagle is a winter resident with concentrations along the Sevier River system, at Fish Springs, Clear Lake, and in Rush Valley.

(2) Aquatic

Warm water and cold water fisheries are located within the region. Major cold water fisheries include Minersville Reservoir, Oak, Corn, Chalk, and Meadow creeks, and several lakes and streams in the Tushar Mountains (see Figure 8.2-9). These waters support brown, brook, cutthroat, and rainbow trout.

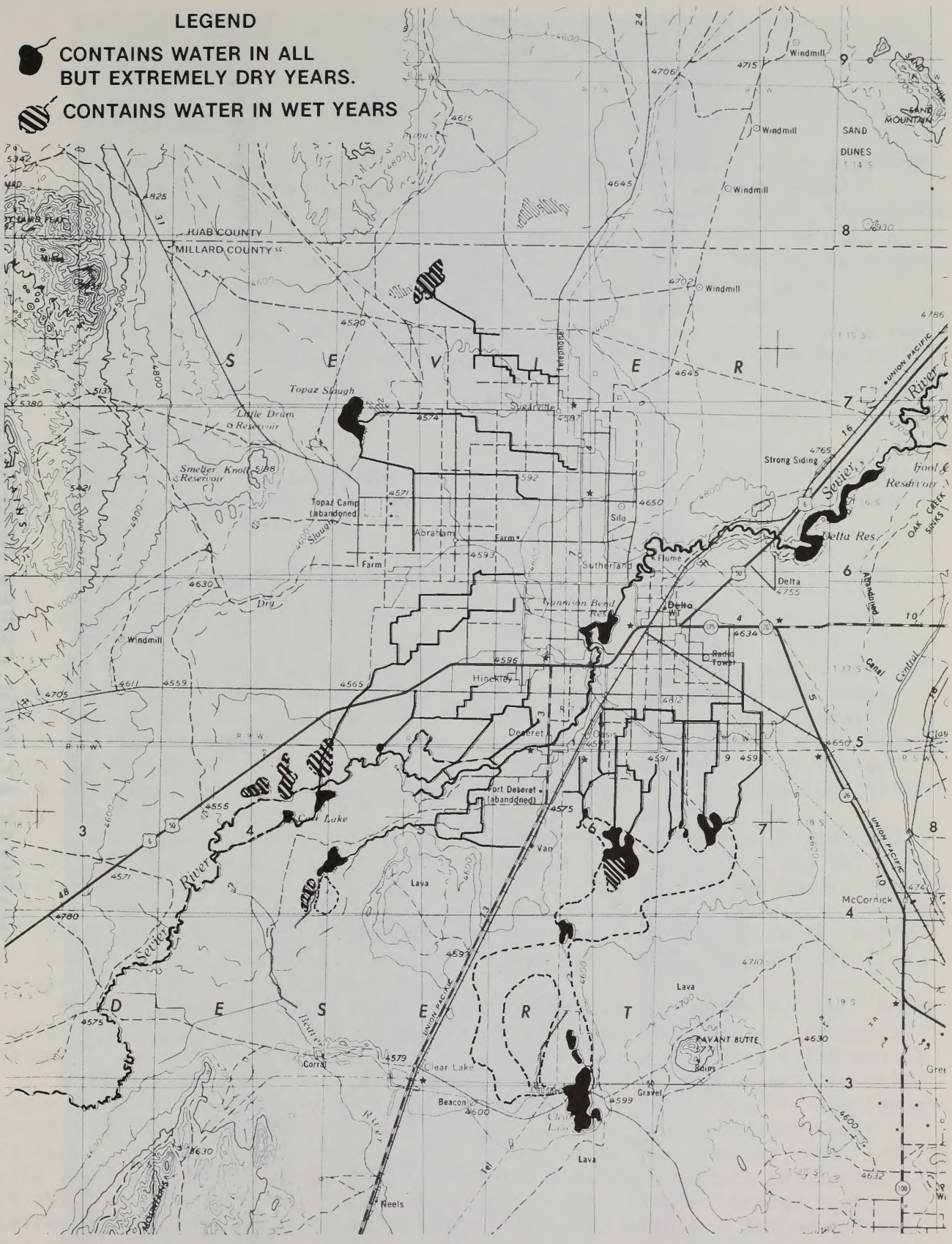
Warm water fisheries are found in Sevier Bridge Reservoir, DMAD Reservoir, Gunnison Bend Reservoir, and the lower Sevier River. The major warm water fish include walleye, white bass, white crappie, yellow perch, bluegill, and channel catfish. In addition, carp, Utah suckers, and Utah chub are found in abundance in these waters.

No threatened or endangered fish species are found in the region. The least chub, the Utah cutthroat and the Snake Valley cutthroat have limited distribution in the desert springs or mountain streams.



GENERAL DISTRIBUTION OF UPLAND GAME BIRDS WITHIN THE REGION

FIGURE **8.2-14**



MAJOR WATERFOWL USE AREAS NEAR DELTA, UTAH

FIGURE 8.2-15

HABITAT AT FOOL CREEK RESERVOIR

FIGURE 8.2-16

b. Project Area

(1) Terrestrial

The Lynndyl power generating station, coal haul railroad, water pipeline, and borrow areas would be located mainly on "cold desert habitat." Small mammals, snakes, lizards, and perching birds are the primary animal inhabitants. Game species are mainly limited to mourning doves and cottontail rabbits, although deer and chukar partridge could be found at some of the borrow areas, and pheasants could be occasionally found throughout the project area.

The peregrine falcon and bald eagle are the only endangered species within the project area. No peregrine falcon nests are known to exist in the vicinity. A few bald eagles winter along the Sevier River and DMAD Reservoir. No threatened species are known to exist in the area.

(2) Aquatic

Fish species inhabiting DMAD Reservoir at the water intake include white bass, walleye, channel catfish, and carp. No threatened or endangered fish are known to exist in the area.

c. Power Transmission System

(1) Terrestrial

Habitats of game species crossed by the transmission line routes are shown on Figures 8.2-B through 8.2-G. In Utah, cricital deer winter range would be crossed along the west side of Monroe Mountain, on the southeast slopes of the Tushar Mountains, and on the north end of the Pine Valley Mountains (Figure 8.2-F). A deer fawning area would be crossed near Ox Valley. In Nevada, critical deer winter range would be crossed in the Limestone Hills (Figure 8.2-B).

Sage grouse habitat would be crossed by transmission lines in Utah and Nevada. In Utah, nesting and brooding areas would be crossed in Dog Valley in Garfield County (Figure 8.2-F) and in another Dog Valley in Juab County (Figure 8.2-D). The transmission line would pass within a mile of a strutting ground in Garfield County. Locations of strutting grounds are unknown in Dog Valley in Juab County. A brooding area would be traversed by the transmission line in Spring Valley, Nevada (Figure 8.2-E).

Raptors are distributed along the entire transmission line system. Known raptor nesting areas in the vicinity of the proposed lines are in the House Range, Confusion Range, Barn Hills, and Limestone Hills (Figures 8.2-B and E).

Endangered species which occur along the transmission line are the bald eagle (endangered), peregrine falcon (endangered), and Utah prairie dog (endangered). A bald eagle winter concentration areas are in Parowan and Cedar Valleys. Inventories of roosting sites are not complete, however, one roosting site is within 1/4 to 1/2 mile of the Sigurd to Paragonah route (mileposts 75-85). An other area along the Paragonah substation to St. George route (milepost 5-10) also has winter roosting sites. No peregrine falcon eyries are known to be located in the vicinity of the proposed transmission lines. Utah prairie dog colonies can be found in Buckskin Valley, Parowan Valley, and Cedar Valley, Utah (Figure 8.2-F and G).

The transmission lines would not cross critical habitats of the desert tortoise (Beaver Dam Slope population) on the west side of the Beaver Dam

Mountains, Utah extending into eastern Nevada. This population has been proposed for endangered status by the U.S. Fish and Wildlife Service. The gila monster, which may exist along the transmission lines, is a unique and uncommon species in Utah and Nevada.

(3) Wild Horses and Burros

The transmission lines would cross the Burbank Hills, Confusion Range, and Buckskin Hills of western Millard County, Utah which are grazed by 125 to 150 wild horses (see Figures 8.2-B and C).

Near New Castle, Utah, 14 wild horses graze along the Lynndyl to Toquop Junction Segment, Figure 8.2-C (mileposts 135-150) while six wild horses are located near Pioche, Nevada along the Lynndyl to Toquop Junction segment (mileposts 165-185). The largest number of wild horses (115) are within the Fortification herd, Nevada, Figure 8.2-B (milepost 110-160).

9. Cultural Resources

a. Regional Setting

Prehistoric and Historic Sites

Several hundred archaeological sites, both prehistoric and historic, have been recorded within the regional setting. Many of these sites are simple lithic scatters of undetermined origin. Other remains, including villages, campsites, and rockshelters, have been identified as being of Fremont origin (Ca. 1000 A.D.). Several historic sites are present also. The exact number of sites in this area is not known.

The National Register of Historic Places lists 24 nationally significant sites in the regional setting, (Federal Register, Vol. 43, 1978). An additional 15 sites are being considered for inclusion in the National Register.

b. Project Area

Prehistoric and Historic Sites

No archaeological sites were located during the sample survey of the project area (Fowler, et. al., 1978).

c. Power Transmission Systems

Prehistoric and Historic Sites

One hundred twenty-two archaeological sites of which 25 are eligible for nomination to the National Register of Historic Places have been recorded along the Lynndyl transmission line routes, (Nielson, 1976; Fowler, et. al., 1978). The sites were classified as: 1) Prehistoric, 111; 2) Historic, 11. Figures 8.2-B through 8.2-G show the approximate locations of these sites.

Three segments of the preferred transmission system would be visible from the following historic sites listed on the National Register of Historic Places (National Register listings as of April, 1979):

Old Irontown, Iron County, Utah
Mountain Meadows Historic Site, Washington County, Utah
Bristol Wells Town Site, Lincoln County, Nevada.

10. Recreation and Aesthetics

a. Regional Setting

(1) Recreation

Recreation attractions within the travel influence regional setting are listed on Table 8.2-7. These include 16 reservoirs or lakes which provide water-based recreation. Little Sahara Recreation Area, the most popular off-road vehicle recreation area in Utah, is within 10 miles of the proposed plant site.

Developed recreation sites (camping and picnicking) and their visitor use are listed on Table 8.2-8 and shown on Figure 8.2-17.

Dispersed recreational activities in the region include hunting for elk, deer, antelope, upland game and waterfowl, fishing, rockhounding, sightseeing, horseback riding, water based activities, off-road vehicle use, camping, and picnicking. Because of the low population density and significant amount of federal land, most of the region is available for dispersed recreational use.

Municipal recreation facilities are listed on Table 8.2-9.

(2) Aesthetics

The region's scenic character is one of vast open-space comprised of a series of desert mountains and valleys. Small towns, access roads, mining developments, transmission lines, livestock grazing, and recreational use have had some impact on natural scenic values, but the region remains largely undisturbed by the presence of man.

b. Project Area

Aesthetics

The entire project area lies within a flat desert valley. The plant would be located within an area of Class C (low quality) scenery, medium visual sensitivity, and foreground visual zone (see Appendix II-14 for definition of terms). All material borrow areas are presently disturbed. Borrow areas C and D would be in areas of Class C scenery, high visual sensitivity and foreground visual zones. All other borrow areas would be in areas of medium visual sensitivity. Visual aspects of the area crossed by the proposed water pipeline and railroad are shown on Figure 8.2-A.

c. Power Transmission Systems

(1) Recreation

The transmission system would pass within 5 miles of the recreation attractions shown on Figure 8.2-18, and listed on Table 8.2-10.

(2) Aesthetics

Scenic quality, visual zones, and visual sensitivity levels in areas through which the Utah Transmission System would pass, including highway crossings, are shown on Figure 8.2-B through 8.2-G.

TABLE 8.2-7

Recreation Attractions Within Travel Influence Regional Setting

Administering Agency	Recreation Attraction Areas
U.S. Park Service	1. Lehman Cave National Monument
U.S. Forest Service	1. Tushar Mountains on the Fishlake National Forest including six reservoirs.
	2. Skyline Drive on the Manti-LaSal National Forest.
	3. Wheeler Peak Scenic Area on the Humbolt National Forest.
	4. Mount Nebo--Santaquin Peak Area of the Uinta National Forest.
Bureau of Land Management	1. Little Sahara Recreation Area
	2. Deep Creek Mountains
	3. Paul Bunyon Wood Pile
	4. The Great Stone Face
	5. Topaz Mountain Rockhounding Area
	6. Dugway Geode Bed Rockhounding Area
	7. Antelope Trilobite beds
	8. Fossil Mountain
	9. Tabernacle Hill
	10. Sand Ledges Winter Use Area
	11. Koosharem Reservoir
	12. Mineral Mountains
	13. Coyote Hills Obsidian Rockhounding Area
	14. Sunstone Knoll Rockhounding Area.
	15. Crystal Peak
	16. Pruess Lake
	17. Pahvant Butte
State of Utah	1. Palisade Lake State Recreation Area
	2. Yuba Lake State Recreation Area
	3. Clear Lake Waterfowl Management Area
	4. Piute Lake State Recreation Area
	5. Minersville Reservoir State Recreation Area
	6. Territorial Statehouse State Park
U.S. Fish and Wildlife Service	1. Fish Springs National Wildlife Refuge.
Others	1. Gunnison Bend Reservoir
	2. Gunnison Reservoir
	3. DMAD Reservoir
	4. Big Rock Candy Mountain
	5. Cove Fort
	6. Mt. Holly Ski Resort

TABLE 8.2-8

Developed Recreation Sites and Their Use

	Site[a]	Length of Season[b]	Number of Visitors[c]	Visitor Days (12 Hours)[d]	Percent of Theoretical Capacity[e]
National Park Service					
1	Lehman Cave National Monument	365	37,392	na	na
USFS					
2	Manti Community Campground	88	na	4,100	21
3	Chicken Creek Campground	102	na	4,300	53
4	Little Valley Campground	89	na	1,400	26
5	Bear Canyon Picnic Area	153	na	10,800	40
6	Cottonwood Campground	139	na	6,100	34
7	Ponderosa Campground	153	na	16,800	39
8	Oak Creek Campground	152	na	20,300	27
9	Maple Hollow Picnicground	152	na	1,300	12
10	Maple Grove Campground	152	na	26,800	48
11	Copleys Cove Picnicground	152	na	2,100	35
12	Shingle Mill Picnicground	152	na	1,500	49
13	Buckskin Charley Picnic-ground	152	na	1,400	61
14	Pistol Rock Picnicground	152	na	5,320	30
15	Adelaid Campground	169	na	3,400	22
16	Maple Canyon Picnicground	102	na	4,000	21
17	Pinchot	102	na	5,800	30
18	Lake Hill	88	na	4,000	20
19	Spring City	88	na	1,000	23
20	City Creek	152	na	4,100	17
21	Mahogany Cove	152	na	3,100	29
22	Little Reservoir	152	na	9,000	44
23	Kents Lake	137	na	14,800	25
24	Anderson Meadow	107	na	6,200	58
25	Little Cottonwood	185	na	14,000	41
26	Castle Rock	185	na		
BLM					
27	Rock Corral Campground	200	na	5,000	na
28	Paul Bunyons Woodpile Picnic Site	200	na	5,000	na
29	Simpson Springs Campground	365	na	5,000	na
30	Koosharem Campground	365	na	5,000	na
31	Little Sahara Recreation Area	365	121,229	303,072	na
32	Sand Ledges Picnic Area	365	na	5,000	na

TABLE 8.2-8 (concluded)

Site[a]	Length of Season[b]	Number of Visitors[c]	Visitor Days (12 Hours)[d]	Percent of Theoretical Capacity[e]
State of Utah				
33 Palisade Lake State Recreation Area	184	31,910	na	130
34 Yuba Lake State Recreation Area	365	82,517	na	198
35 Minersville Reservoir Campground	365	38,444	na	na
36 Piute Reservoir	365	3,416	na	na
Millard County				
37 Gunnison Bend Reservoir County Park	365			na

Source: U.S. Forest Service, Bureau of Land Management, National Park Service, and State of Utah 1976-77 Recreation Use Reports.

[a]Numbers refer to Figure 8.2-17.

[b]Number of days a year a site can be used.

[c]Indicates the number of visitors for 1976-77. Unavailable information is indicated by "na."

[d]Recreation use reported in visitor days for 1976 (a visitor day consists of 12 visitor hours which may be aggregated by one or more persons). Unavailable information is indicated by "na."

[e]Statistical sampling indicates that sites receiving use that exceeds 40 percent of capacity may show signs of deterioration, require heavy maintenance, and user experience levels diminish from overcrowding (i.e., loss of privacy and increase in disturbances). Unavilable information is indicated by "na."

LEGEND

NUMBERED AREAS ARE DISCUSSED IN THE TEXT.

DEVELOPED RECREATION SITES IN THE REGIONAL SETTING

FIGURE 8.2-17

TABLE 8.2-9

Municipal and County Outdoor Recreation Facilities

Facility	Municipality			
	Delta-Lynndyl Area	Eureka Area	Nephi Area	Fillmore Area
Golf Courses 9-holes	1	0	1	0
Ball Parks	4	2	3	5
Tennis courts	9	2	7	4
Swimming pools	1	0	1	1
Fairgrounds	1	0	1	1
Rodeo Grounds	2	0	1	1
Neighborhood Park Acreage[a]	43.13	4.16	37.92	31.00

Source: Architects/Planners Alliance from
(1) Six-County Organization
(2) Utah State Board of Education

[a]Includes school ground acreage available for recreation.

TABLE 8.2-10

Recreation Attractions and Areas of High Scenic Quality
Along the Proposed Power Transmission System

Map Reference Number	Name of Attraction	Proposed Transmission System Segment	Location of Line to Attraction
1.	Pahvant Butte[a]	Salt Wash to Toquop Jct. (California System)	Proximate
2.	Tabernacle Hill[a]	Salt Wash to Toquop Jct. (California System)	Proximate
3.	Coyote Hills Obsidian Beds	Salt Wash to Toquop Jct. (California System)	Proximate
4.	Dominquez-Escalante Trail (marked hiking segment)	Salt Wash to Toquop Jct. (California System)	Proximate
5.	Gunlock Reservoir State Beach	Salt Wash to Toquop Jct. (California System	Proximate
6.	Ripple Arch[a]	Salt Wash to Toquop Jct. (California System)	Proximate
7.	Red Mountain[a]	Salt Wash to Toquop Jct. (California System)	Proximate
8.	Fossil Mountain	Salt Wash to Highland Jct. (California System)	Proximate
9.	Crystal Peak[a]	Salt Wash to Highland Jct. (California System)	Proximate
10.	Piute Reservoir State Beach	Sigurd SS to Paragonah (California System)	Proximate
11.	Notch Peak[a]	Salt Wash to Gonder (Utah System)	Proximate
12.	Wheeler Peak Scenic Area	Salt Wash to Gonder (Utah System)	Proximate
13.	Weaver Creek Scenic Area	Salt Wash to Gonder (Utah System)	Crosses--milepost 104 to 105
14.	Swamp Cedar Natural Area	Salt Wash to Gonder (Utah System)	Proximate
15.	Pygmy Sage Natural Area	Salt Wash to Gonder (Utah System)	Proximate
16.	Comins Lake	Salt Wash to Gonder (Utah System)	Proximate
17.	Cave Lake State Park	Salt Wash to Gonder (Utah System)	Proximate
18.	Bat Guano Cave	Salt Wash to Gonder (Utah System)	Proximate

[a]Area of high quality (Class A) scenery.

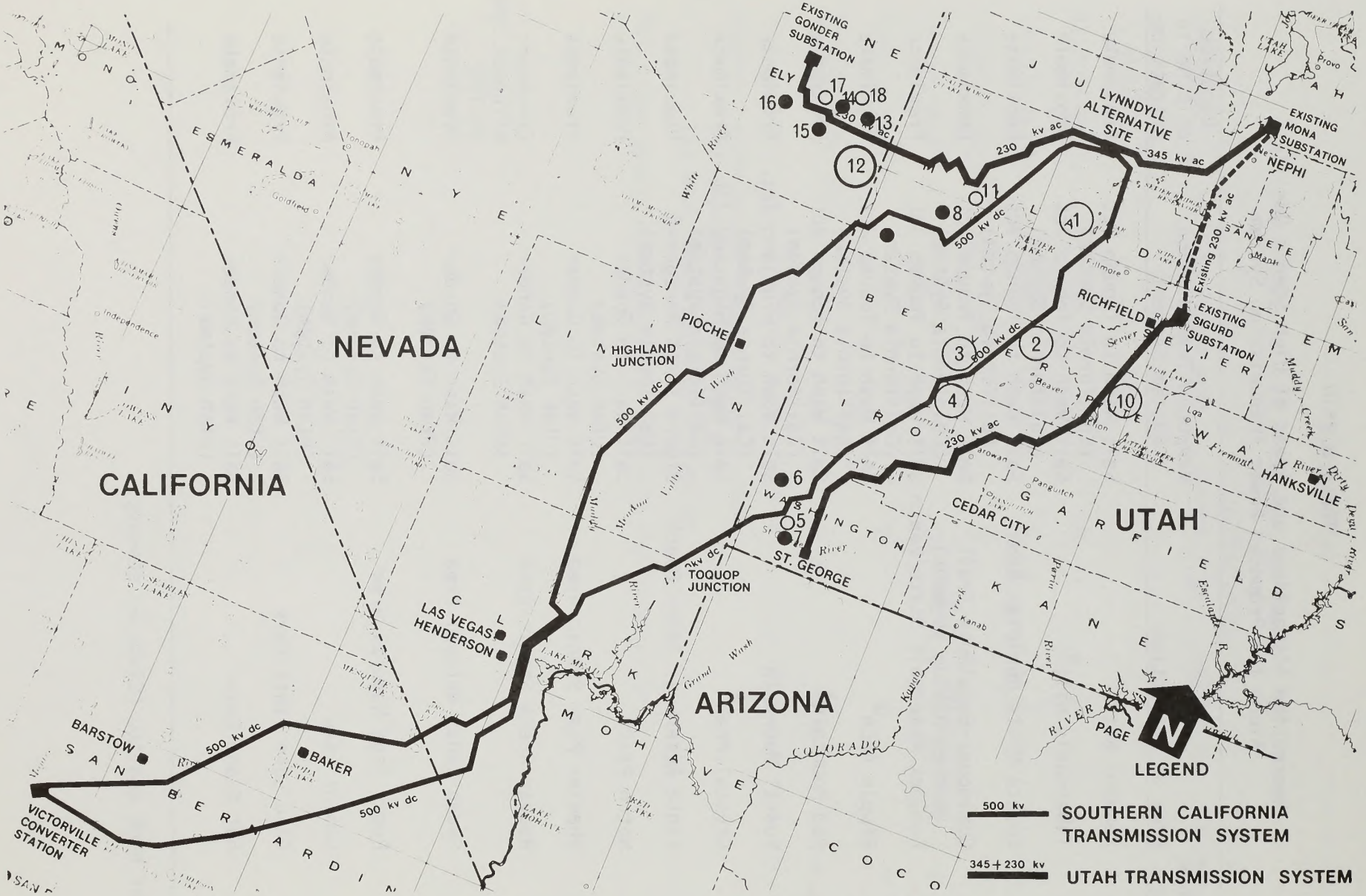


FIGURE 8.2-18

RECREATION ATTRACTIONS AND AREAS OF HIGH SCENIC QUALITY ALONG THE LYNNDYL TRANSMISSION SYSTEMS

The area through which the California System would pass is largely undeveloped open space. A 230-kV power line presently exists along the proposed Utah transmission route.

Areas of high quality scenery (Class A) along the transmission lines are also shown on Figure 8.2-18 and listed on Table 8.2-9.

11. Land Uses

In addition to the project area, several regions have been defined to describe land uses. The regions are: 1) the DMAD and the Central Utah Canal service areas; 2) Millard County; 3) Millard and Juab counties; and 4) the travel influence zone regional setting.

a. Regional Setting

Irrigation water distribution, crop yields, cropping patterns, and consumptive use of water in the DMAD and Centraul Utah Canal Service areas of Millard County are shown on Tables 8.2-11 through 8.2-14.

The Soil Conservation Service has not yet completed its inventory of prime and unique farmlands in Millard County (see Appendix II-15 for definitions).

The land uses of incorporated communities in Millard and Juab counties are listed on Table 8.2-15.

There are no designated wilderness areas, primitive areas, or natural areas within the regional setting. United States Forest Service (USFS) administered lands have been evaluated for wilderness values in the Roadless Area Review and Evaluation II (RARE II). Within the regional setting, the RARE II Final Environmental Statement recommends one area for wilderness designation and two areas for further study for wilderness or multiple use mangement. All other RARE II areas in the regional setting were recommended as non-wilderness.

An accelerated wilderness review of BLM administered lands that would be directly affected by proposed IPP facilities has identified five Wilderness Study Areas (WSAs) within the regional setting (Appendixes II-16 and II-17 define wilderness terms). Wilderness review of other BLM administered lands in the region has officially begun, but results are not yet available. The Deep Creek Mountains have been identified through BLM's management planning as having primitive and wilderness values. All currently identified areas with potential for wilderness designation are listed in Table 8.2-16 and their location is shown on Figure 8.2-19.

Table 8.2-17 summarizes design and volume data for the major highways in the area.

b. Project Area

Land ownership for the Generating Station, support facilities, water supply system, 46-kV transmission line, and railroad is described in Chapter 1.

The entire project area is allotted to livestock grazing. The proposed borrow areas have all been previously used to obtain borrow material.

BLM administered lands within the project area have been inventoried for wilderness values and were determined not to possess wilderness character.

TABLE 8.2-11

Irrigated Land Within Delta-Melville-Abraham-Deseret (DMAD) Service Area

Company	1972 (Average Year) Acres of Irrigated Land
Delta	8,530
Melville	9,060
Abraham	15,580
Deseret	17,860
Total	51,030

Source: Intermountain Power Project Hydrology Report, Hamer, et al., 1978.

TABLE 8.2-12

DMAD Service Area Cropping Pattern and Consumptive Use of Water

Crop	Percent of Planted Acres	Consumptive Use (inches)	Annual Yield/Acre
Alfalfa hay	32	30	4 ton
Alfalfa seed	40	12	400 lb.
Grain	18	17	60 bu.
Corn	10	21	18 ton

Source: Intermountain Power Project Hydrology Report, Hamer, et al., 1978.

TABLE 8.2-13

Central Utah Canal Service Area

Area	1972 (Average Year) Acres of Irrigated Land
Lynndyl-Leamington	3,170
McCornick-Greenwood	2,820
Pahvant-North Flowell	2,870
Total	8,860

Source: Intermountain Power Project Hydrology Report, Hamer, et al., 1978.

TABLE 8.2-14

Central Utah Canal Service Area Cropping Pattern and Consumptive Use

Crop	Percent of Planted Acres			Consumptive Use (Inches)	Annual Yield/ Acre
	Lynndyl-Leamington Service Area	McCornick-Greenwood Service Area	Pavant-North Flowell Service Area		
Alfalfa hay	69	60	75	36	4 ton
Grain	25	25	25	17	85 bu.
Corn	6	5	--	25	18 ton
Potatoes	--	10	--	17	20,500 lbs

Source: Intermountain Power Project Hydrology Report, Hamer, et al., 1978.

TABLE 8.2-15

Land Use Inventory of Selected Incorporated Communities in Millard and Juab Counties

City	Agricultural and Vacant Acres	Residential Acres	Commercial Acres	Industrial Acres	Roads-Railroads Transportation Acres[a]	Public Acres	Total Acres
Juab County							
Eureka	141.2	287	36	35	49	12	531.2
Nephi	262	702.4	43.6	10	217	45	1,280
Millard County							
Delta	343.5	307.2	23.5	9	115.2	40	838.4
Fillmore	1,265.2	694.8	43	370	235	35	2,643.2
Hinkley	8,707.6	180.7	3	2	98.7	32	9,024
Holden	210.9	105	3.5	--	48.3	3.5	371.2
Leamington	919	49	--	--	10.2	1	979.2
Lynndyl	708.4	51.6	1.5	0	36	1.5	799
Oak City	110.7	134	1	0	42.7	6	294.4
Scipio	295.5	207	5	1	83	3.5	595

Source: Six County Commissioners Organization, 1978.

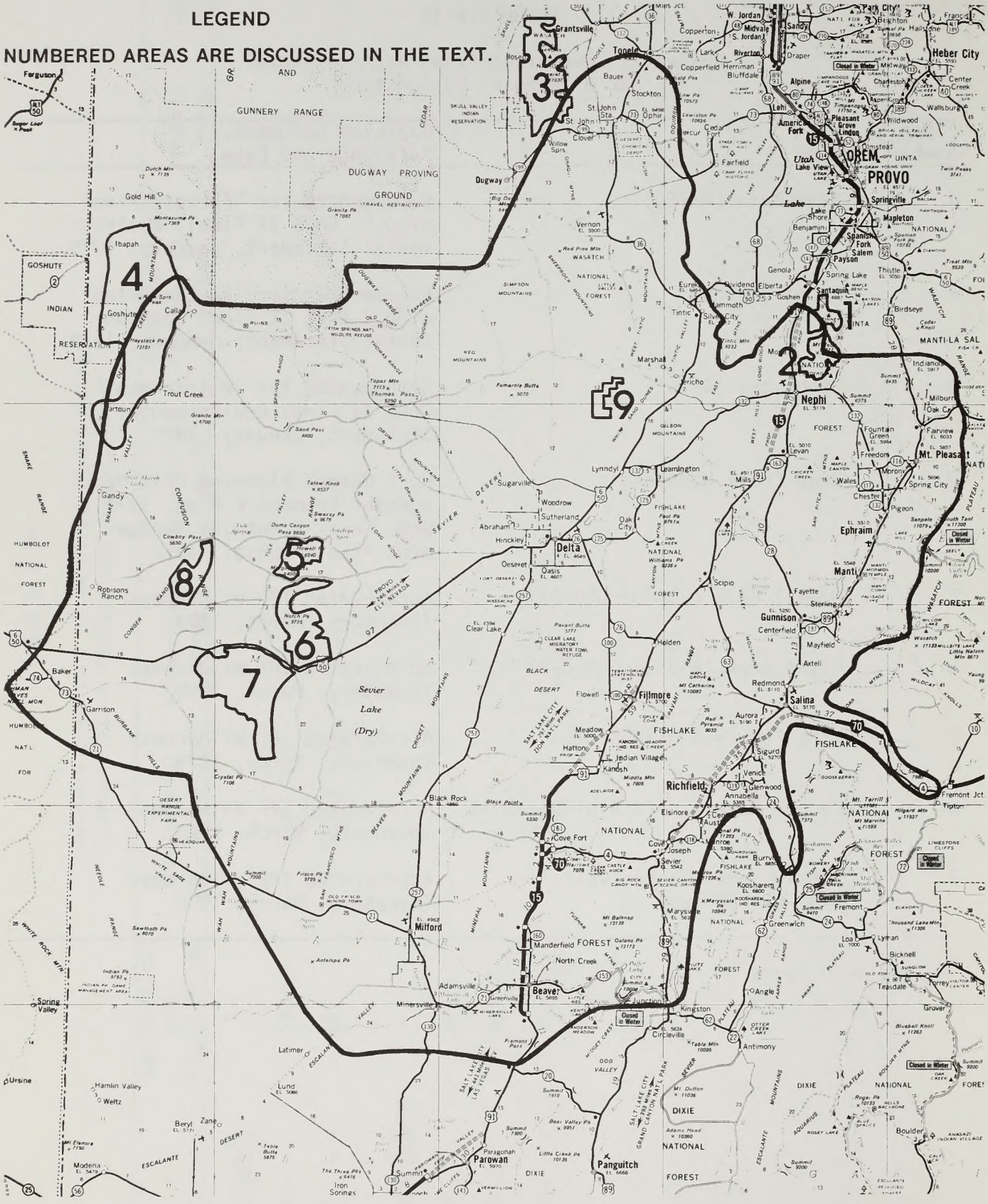
[a]Includes acreages on roads, railroads, etc.

TABLE 8.2-16

Currently Identified Areas With Potential
For Wilderness Designation

Map Number[a]	Name	Decision Document, Reference and Date
1.	Santaquin (4-720)	Recommended for "Further Planning," RARE II Final Environmental Statement, January, 1979.
2.	Nephi (4-729)	Recommended for "Further Planning," RARE II Final Environmental Statement, January, 1979.
3.	Stansbury (4-757)	Recommended for "Wilderness," RARE II Final Environmental Statement, January, 1979.
4.	Deep Creek Mountain	West Desert Planning Unit Management Framework Plan, 1973. Deep Creek Mountains Management Area Proposal, 1977.
5.	Howell Peak (WSA UT-050-077)	Accelerated IPP Wilderness Inventory, March, 1979.
6.	Notch Peak (WSA UT-050-078)	Accelerated IPP Wilderness Inventory, March, 1979.
7.	King Top (WSA UT-050-070)	Accelerated IPP Wilderness Inventory, March, 1979.
8.	Conger Mountain (WSA UT-050-035)	Accelerated IPP Wilderness Inventory, March, 1979.
9.	Little Sahara - Rockwell (WSA UT-050-186)	Accelerated IPP Wilderness Inventory, March, 1979.

[a]Refers to numbers on Figure 8.2-19.



AREAS WITH POTENTIAL FOR WILDERNESS DESIGNATION

FIGURE 8.2-19

TABLE 8.2-17

Selected Characteristics of Major Highways

	1978 Volume in AADT[a]	Capacity in AADT[b]
U.S. 6 (Eureka to Lynndyl)	650	5,000-8,000
U.S. 6 (Delta to Lynndyl)	850	5,000-8,000
State Road 132 (Nephi to Leamington)	300	4,000-7,000
State Road 132 (Leamington to Lynndyl)	495	4,000-7,000
U.S. 50 (Fillmore to Delta)	650	5,000-8,000

Source: Architects/Planners Alliance.

[a]Average Annual Daily Traffic.

[b]Maximum volume of cars per day that highway could handle at acceptable operating capacity.

c. Power Transmission Systems

The transmission lines would cross five land use categories--open range, forest, urban, agricultural and barren. The location of these are shown on the environmental profiles on Figures 8.2-B through 8.2-G.

The power transmission systems would be proximate to three areas that have been recommended for further planning by the Forest Service in the RARE II Final Environmental Statement. Other RARE II areas along the proposed transmission system have been recommended for non-wilderness. The transmission system would be proximate to three and would pass through one Wilderness Study Area (WSA) identified by the BLM. The system would be proximate to one BLM Instant Study Area (ISA) and would pass through one uninventoried BLM roadless unit. Table 8.2-18 lists areas with potential for wilderness designation and Figure 8.2-20 shows their locations.

12. Land Use Plans and Controls

a. Regional Setting

The existing Millard County Master Plan of Land Use was adopted by the Millard County Commission in January of 1970. At that time, the county was divided into seven zones: open range and forest (RF-1), forest and recreation (FR-1), agriculture (A-1), residential (R-1), community commercial (CC-1), highway commercial (HC-1), and manufacturing (M-1) (Master Plan of Land Use for Millard County, Utah 1970).

The county has hired a planner who is updating the Master Plan. The update is emphasizing goals and policies concerning IPP. The planner has initiated a land use inventory, and is assisting the small towns to establish planning and zoning ordinances. County officials in Millard County have expressed a desire to prevent uncontrolled "boom town" growth in the Delta-Lynndyl area (Shaw, 1979).

b. Project Area

The project area is located within BLM's Richfield District, House Range Resource Area. Currently, BLM's planning documents do not consider facilities such as a power generating station and ancillary facilities. Millard County has designated this area open range and forest (RF-1).

c. Power Transmission System

Table 8.2-19 shows the status of federal land use plans and the responsible agency along the proposed transmission line routes. Locations are shown on Figures 8.2-B through 8.2-G.

All areas crossed by the transmission lines are either unzoned or zoned rural--open space--agricultural.

13. Human Resources

Population

Populations of Millard and Juab counties are shown on Table 8.2-20. Since 1960, more than 55 percent of Juab County's population has been concentrated in Nephi. The combined population of Delta and Fillmore accounted for

TABLE 8.2-18

Areas With Potential for Wilderness Designation
Along the Proposed Transmission System

Map Reference Number	Administering Agency	Name of Area	Proposed Transmission System Segment (California)	Location of Proposed T/L Segment to Identified Area	Documentation
1	BLM	King Top, WSA UT-050-070	Lynndyl to Highland Jct. (California System)	Corridor is approximately 1/2 mile within area (milepost 71 to 75).	IPP accelerated Wilderness Inventory, March, 1979.
2.	BLM	Fortification Range WSA NV-040-177	Lynndyl to Highland Jct. (California System)	Proximate[a]	IPP accelerated Wilderness Inventory, March, 1979.
3.	BLM	Notch Peak, WSA UT-050-078	Lynndyl to Gonder (Utah System) Salt Wash to Highland Jct. (California System)	Proximate	IPP accelerated Wilderness Inventory, March, 1979.
4.	BLM	Howell Peak, WSA UT-050-007	Lynndyl to Gonder (Utah System)	Proximate	IPP accelerated Wilderness Inventory, March, 1979.
5.	BLM	Conger Mountain, WSA UT-050-035	Lynndyl to Gonder (Utah System)	Proximate	IPP accelerated Wilderness Inventory, March, 1979.
6.	USFS	Mt. Moriah, 4-352	Lynndyl to Gonder (Utah System)	Proximate	RARE II Final Environmental State, January, 1979.
7.	USFS	Wheeler Peak, 4-359	Lynndyl to Gonder (Utah System)	Proximate	RARE II Final Environmental Statement, January, 1979.
8.	BLM[b]	Pygmy Sage, ISA NV-040-099	Lynndyl to Gonder (Utah System)	Proximate	IPP accelerated Wilderness Inventory, March, 1979.
9.	BLM[b]	Swamp Cedar, ISA NV-040-089	Lynndyl to Gonder (Utah System)	Proximate	IPP accelerated Wilderness Inventory, March, 1979.
10.	BLM	Uninventoried Roadless Unit NV-040-100	Lynndyl to Gonder (Utah System)	Corridor is approximately 200 feet within unit (milepost 106 to 109).	IPP accelerated Wilderness Inventory, March, 1979.

[a]"Proximate" is defined as within 5 miles of and visibile from the identified areas with potential for wilderness designation.

[b]Intensive inventory documented the lack of wilderness character within these units, but the BLM must protect these Instant Study Areas and their contiguous roadless acreage from physical disturbance until Congress acts on the Bureau's recommendation of non-suitable for wilderness designation.

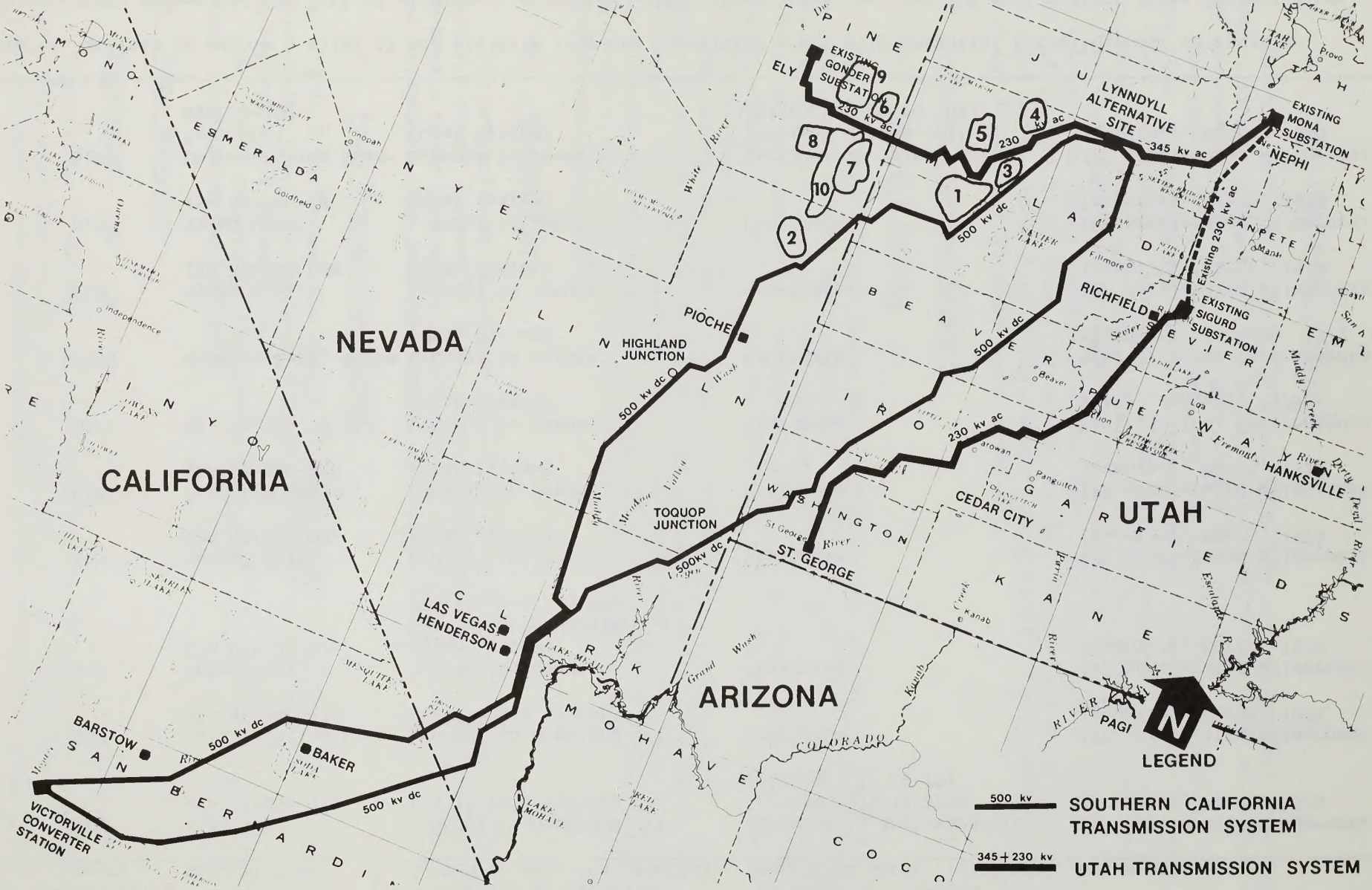


FIGURE 8.2-20

AREAS WITH POTENTIAL FOR WILDERNESS DESIGNATION ALONG THE LYNNDYL TRANSMISSION SYSTEMS

Table 8.2-19

Federal Land Use Plans Along Transmission Lines

Agency	Plan	Status
BLM Richfield District Office		
Sevier Desert (Topaz) Planning Unit	Management Framework Plan	Complete
House Range (Topaz) Planning Unit	Management Framework Plan	Complete
Warm Springs Planning Unit	Management Framework Plan	Complete
North Sevier Planning Unit	Management Framework Plan	Complete
Piute Planning Unit	Management Framework Plan	Complete (to be revised)
BLM Cedar City District Office		
Cedar City Planning Unit	Management Framework Plan	Complete
Wah Wah (Pinyon) Planning Unit	Management Framework Plan	Complete
Buckskin-Mud Spring (Cedar-Beaver) Planning Unit	Management Framework Plan	Complete
Pinyon Planning Unit	Management Framework Plan	Complete
Virgin River Planning Unit	Management Framework Plan	Complete
Beaver Planning Unit	Management Framework Plan	
BLM Ely District Office		
Moriah Planning Unit	Management Framework Plan	Not Complete
Lake Valley Planning Unit	Management Framework Plan	Complete
Wilson Planning Unit	Management Framework Plan	Complete
BLM Las Vegas District Office		
Caliente Planning Unit	Management Framework Plan	Not Complete
Virgin Valley Planning Unit	Management Framework Plan	Not Complete
Stateline Planning Unit	Management Framework Plan	Not Complete
USFS Fishlake National Forest		
Beaver Ranger District	Multiple Use Plan	Complete
Fillmore Ranger District	Multiple Use Plan	Complete
USFS Dixie National Forest		
Pine Valley Ranger District		
Enterprise Planning Unit	Land Use Plan	Complete
USFS Humboldt Natonal Forest		
Ely Ranger District	Multiple Use Plan	Complete

TABLE 8.2-20

Population of Communities in Juab and Millard Counties

Communities	1960		1970		1978	
Juab						
Eureka	771	(16.8%)	753	(16.5%)	814	(14.1%)
Levan	421	(9.2%)	376	(8.2%)	464	(8.1%)
Mona	347	(7.5%)	309	(6.8%)	510	(8.8%)
Nephi	2,566	(55.8%)	2,699	(59.0%)	3,488	(60.4%)
Unincorporated	492	(10.7%)	437	(9.5%)	498	(8.6%)
Total	4,597	(100.0%)	4,574	(100.0%)	5,774	(100.0%)
Millard						
Delta	1,576	(20.0%)	1,610	(23.0%)	2,177	(25.6%)
Fillmore	1,602	(20.4%)	1,411	(20.2%)	1,897	(22.3%)
Hinckley	397	(5.0%)	400	(5.7%)	434	(5.1%)
Holden	388	(4.9%)	351	(5.0%)	391	(4.6%)
Kanosh	499	(6.4%)	319	(4.6%)	374	(4.4%)
Leamington	190	(2.4%)	112	(1.6%)	111	(1.3%)
Lynndyl	145	(1.8%)	111	(1.6%)	111	(1.3%)
Meadows	244	(3.1%)	238	(3.4%)	272	(3.2%)
Oak City	312	(3.9%)	278	(3.9%)	332	(3.9%)
Scipio	328	(4.3%)	264	(3.8%)	247	(2.9%)
Unincorporated	2,185	(27.8%)	1,894	(27.2%)	2,159	(25.4%)
Total	7,866	(100.0%)	6,988	(100.0%)	8,505	(100.0%)

Source: Architect/Planners Alliance, 1978.

Note: Numbers in parentheses indicate percentage of total county populations.

over 40 percent of Millard County's population during the same period. Population decreased in most communities between 1960 and 1970, except in Nephi, Delta, and Hinkley. During the 1970 to 1978 period, population increased 26 percent in Juab County and 22 percent in Millard County.

Population distribution around the major cities in the two counties is:

	1978 Population
Delta-Lynndyl Area (including Hinkley, Oak City, and Leamington)	4,250
Eureka Area	1,091
Nephi Area (including Mona and Levan)	4,683
Fillmore Area (including Holden, Meadow, Kanosh and Scipio)	4,261

Juab County had a 0.5 percent decrease in population between 1960 and 1970, but had an 8.0 percent increase in 1976-1977. Millard County had an 11.2 percent decrease in population between 1960 and 1970, but showed a 0.9 percent increase in 1976-1977.

Employment

Civilian labor force and unemployment data for Millard and Juab counties are shown on Table 8.2-21. The labor force has increased by 9.9 percent in Millard County between 1970 and 1977. During the same period, Juab County had a 15.9 percent increase in labor force.

Table 8.2-22 shows total employment, by sector, for Juab and Millard counties in 1960, 1970, and 1977. A declining trend in agricultural employment is evident in both counties since 1960. In 1960, agriculture was responsible for 20 percent of total employment in Juab County and nearly 40 percent in Millard County. In 1977, agriculture accounted for only 9.3 percent of the employment in Juab County and 24.1 percent in Millard County (decreases of 40.3 percent and 34.2 percent, respectively).

Manufacturing in Millard County has increased over 400 percent since 1960 and provides 8.3 percent of the county's employment. Juab County has become oriented toward manufacturing; 28.0 percent of the county's total employment was in manufacturing in 1977 (a 69.1 percent increase since 1960).

Income

Total Earnings

Table 8.2-23 shows the 1970 and 1976 total earnings, by source, for Juab and Millard counties and the State of Utah. Earnings since 1970 have increased $3,303,000 or 34.4 percent in Juab County and $8,488,000 or 69.8 percent in Millard County. Earnings in the State of Utah have increased 88.7 percent during the same period.

TABLE 8.2-21

Civilian Labor Employed and Unemployed

	Years			
	1970	1975	1976	1977
Labor Force				
Millard	2,970	3,626	3,240	3,250
Juab	1,830	2,119	1,980	1,971
Number Employed				
Millard	2,760	3,399	3,040	3,085
Juab	1,650	1,932	1,840	1,854
Number Unemployed				
Millard	210	227	200	165
Juab	180	187	140	117
Unemployment Rates (percent)				
Millard	7.1	6.3	6.2	5.1
Juab	9.8	8.8	7.1	5.9

Source: Utah Department of Employment Security, 1977.

TABLE 8.2-22

Employment By Sector--Juab and Millard Counties
1960, 1970, 1977

	1960			1970			1977		
	Juab	Millard	Juab and Millard	Juab	Millard	Juab and Millard	Juab	Millard	Juab and Millard
Agriculture	340	1,050	1,390	182	665	847	203[a]	691[a]	854
Self Employed	210	400	610	114	333	447	110[a]	340[a]	450
Non-Agriculture									
Mining	171	--	171	200	85	285	41	60	101
Construction	--	--	--	--	40	40	26	42	68
Manufacturing	327	42	369	338	156	544	553	231	784
Transportation, Communication, and Utilities	59	154	213	41	110	151	49	148	197
Trade	217	354	784	315	408	723	411	542	953
Finance, Insurance and Real Estate	--	20	20	--	36	36	32	48	80
Service and Miscellaneous	49	139	188	91	139	230	173	153	326
Government	288	431	719	365	557	922	397	547	944
Total	1,696	2,647	4,343	1,729	2,529	4,258	1,975	2,782	4,757

Source: Utah Employment Security, 1977.

--Not shown to avoid disclosure of individual company data.

[a]Data for 1976.

TABLE 8.2-23

Total Earnings By Source
1970, 1976

	Earnings in Thousands of Dollars					
	1970			1976		
Source	Juab	Millard	State	Juab	Millard	State
Farm	682	2,536	77,511	241	4,287	83,542
Non-Farm	8,921	9,620	2,701,445	12,665	16,357	5,160,853
Private	7,150	6,371	1,933,175	9,942	10,989	3,934,275
Mfg.	(D)	610	454,673	4,906	1,283	880,968
Mining	(D)	(D)	127,666	270	868	251,825
Const.	178	445	155,756	(D)	791	434,104
Trade	1,576	2,266	477,303	2,642	3,975	951,307
Finance, Inc., Real Estate	(D)	215	117,272	225	443	226,676
Trans. & Com.	(D)	723	226,077	597	1,973	445,621
Service & Misc.	439	1,050	368,297	929	1,281	724,136
Other	63	(D)	6,127	(D)	375	9,638
Government	1,771	3,249	768,270	2,723	5,363	1,226,578
Federal-Civilian	317	758	383,231	376	1,142	526,394
Federal-Military	66	103	48,060	70	111	69,304
State-Local	1,388	2,388	336,979	2,277	4,110	630,880
Total	9,603	12,156	2,778,956	12,906	20,644	5,244,395

Source: U.S. Department of Commerce--Bureau of Economic Analysis.

(D) Not shown to avoid disclosure of individual company data. Data are included in totals.

Total Personal Income

Table 8.2-24 shows personal income for 1970 and 1976 in Juab and Millard counties and the State of Utah. Since 1970, Juab County personal income has increased by $5,201,000 (43.2 percent), and Millard County personal income has increased by $13,830,000 (81.6 percent). The State of Utah's increase (91.0 percent) was higher than in the two counties.

Per Capita Income

Per capita income, in Millard and Juab counties, lags behind the State of Utah's by 28 percent and 34 percent respectively. Table 8.2-25 shows per capita income.

In Millard County, per capita income increased by $1,213 between 1970 and 1976--an average annual rate of 6.7 percent. Juab County had an increase of $1,185 for an average rate of 7.1 percent per year during the same period. Per capita income in the State of Utah increased by $2,181--an average annual rate of 9.1 percent.

Infrastructures

Transportation Systems

Air and Rail Services

Delta and Fillmore have municipal airports, each having facilities for both private and commuter airplanes. Sky West Airlines is the only airline providing commuter service to the area and offers daily service to and from Salt Lake City.

No passenger rail service is provided in the area, but the Union Pacific Railroad does provide freight service to Eureka, Delta, Fillmore, and Nephi.

Public Utilities

Water

All municipalities in the area have central water distribution systems. Water for domestic purposes, in unincorporated areas, is supplied by individual wells. Table 8.2-26 presents data for the culinary water systems in the area. New water rights are only being granted to individuals who locate on large parcels of land in unincorporated areas. Municipalities can only increase their water supply by purchasing existing water rights.

Sewage System

The only municipalities with central sewage treatment facilities are Delta, Eureka, Nephi, and Fillmore. All other towns and unincorporated areas use individual septic tanks for sewage treatment. Table 8.2-27 lists existing sewage treatment facilities and their capacities in Millard and Juab counties.

Solid Waste

With the exception of Nephi, no regular solid waste pick-up service is provided. Each city, town, and county has its own open dump. Until sanitary

TABLE 8.2-24

Total Personal Income
1970, 1976

	Income in Thousands of Dollars		
	Juab	Millard	State
1970 Total Personal Income	$12,039	$16,957	$3,439,462
1976 Total Personal Income	17,240	30,787	6,569,163

Source: U.S. Department of Commerce--Bureau of Economic Analysis.

TABLE 8.2-25

Per Capita Income for Millard and Juab Counties

	Per Capita Income in Dollars			
	1970	1972	1974	1976
Millard County	$2,555	$3,148	$3,862	$3,768
Juab County	2,326	2,608	3,259	3,511
State of Utah	3,169	3,719	4,462	5,350

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 8.2-26

Existing Culinary Water Systems in the Millard and Juab Counties

Area	Est. 1978 Population Served	Water Rights--Capacity[a] Population Served[b]	Storage Capacity[a] Population Served[b]	Status of System[c]
Delta-Lynndyl Area				
(West Millard County)				
Delta	2,177	8,930	2,475	Approved
Hinkley	434	667	413	Class Pending
Lynndyl	111	1,099	208	Prov. Approved
Oak City	332	1,026	495	Approved
Leamington	111	667	248	Approved
Total Municipalities	3,192	12,281	3,838	
Unincorporated Areas	1,085			
Total	4,250			
Eureka Area				
(West Juab County)				
Eureka	814	1,939	720	Class. Pending
Unincorporated Area	277			
Total	1,091			
Nephi Area				
(East Juab County)				
Nephi	3,488	19,130	10,400	Class. Pending
Mona	510	195	400	Prov. Approved
Levan	464	1,293	720	Class Pending
Total Municipalities	4,462	20,618	11,520	
Unincorporated Areas	221			
Total	4,683			
Fillmore Area				
(East Millard County)				
Fillmore	1,897	2,666	2,432	Prov. Approved
Holden	391	666	1,238	Class. Pending
Meadow	272	7,118	371	Class. Pending
Kanosh	374	800	285	Class. Pending
Scipio	247	880	264	Class. Pending
Total Municipalities	3,181	12,730	4,590	
Unincorporated Area	1,000			
Total	4,261			

Source: Compiled by Architects/Planners Alliance from Wistison, Division of Water Rights of the State of Utah and interviews with local officials.

[a]Based on State Health Standards as follows: Supply: 1,600 gallons per connection per day.
Storage: 800 gallons per connection.

[b]Based on 3.3 persons per connection in Millard County and 3.2 persons per connection in Juab County (same as household size for each county).

[c]Approved means water meets state health standards. Provisionally Approved means some water quality problems exist, but system is generally safe for public health. Classification Pending means system is marginal in meeting health standard (i.e., has bacterial concern, new system and not sure of quality, old system--rust from pipe possible problem, etc.

TABLE 8.2-27

Existing Sewage Disposal Facilities
in Millard and Juab County

Area	Est. 1978 Population Served	Capacity (In population served)
1. Delta-Lynndyl Area		
(West Millard County)		
Delta	2,177	4,700
Hinkley	434	500
Lynndyl	111	1,000
Oak City	332	1,000
Leamington	111	700
Total Municipalities	3,165	
Unincorporated Area	1,085	
Total Area #1	4,250	
2. Eureka Area		
(West Juab County)		
Eureka	814	None
Unincorporated Area	277	
Total Area #2	1,091	
3. Nephi Area		
(East Juab County)		
Nephi	3,488	10,000
Mona	510	700
Levan	464	
Total Municipalities	4,462	
Unincorporated Area	221	
Total Area #3	4,683	
4. Fillmore Area		
(East Millard County)		
Fillmore	1,897	8,000
Holden	391	800
Meadow	272	500
Kanosh	374	700
Scipio	247	700
Total Municipalities	3,181	
Unincorporated Area	1,080	
Total Area #4	4,261	

Source: Compiled by Architects/Planners Alliance from information supplied by Utah State Health Department.

Notes: N/A indicates not available.
--indicates no central facilities, septic systems.

landfill standards are imposed, under the Resource Conservation and Recovery Act, growth of each of these open dumps is unlimited.

Presently in Millard County, officials are exploring the idea of providing a centralized sanitary landfill for all local governments.

Education

Table 8.2-28 presents school enrollment, capacity, plans for new schools, and bonding status for schools within the area.

Public Safety

Law Enforcement

There are 16 law enforcement officers in Millard County. According to the Millard County Sheriff (1978), there is a need for four additional men and additional vehicles in the area.

No specific data were available on crime rates in Millard County, but the County Sheriff's office noted that most of their cases involve thefts and burglaries. In recent months there has been an increase in drug traffic.

There are a total of 19 law enforcement personnel in Juab County. In addition, there are 40 members of a county reserve patrol organization.

In 1976 there were 319 reported crimes in Juab County. A majority of these were for motor vehicle violations and public intoxication. The major change reported for 1977 was an increase in thefts.

Fire Protection

Fire protection facilities within the area are supplied by the municipalities. Protection in smaller communities and unincorporated areas is carried out by adjacent cities under mutual aid agreements.

Public Health

Hospitals and Clinics

The population in Millard and Juab counties is served by hospitals in Nephi, Fillmore, Delta, and a medical clinic in Eureka. The Nephi hospital has 31 beds and operates at about 48 percent occupancy. The hospital in Delta has 36 beds and is operating at about 90 percent occupancy. The Fillmore hospital has a 22 bed capacity including several permanent nursing care beds. The occupancy rate is between 25 and 30 percent. In addition, the Fillmore facility has outpatient care including an X-ray lab, inhalation treatment, and physical therapy.

Mental health needs in Juab County are handled by a clinical psychologist who is an employee of the Timpanogos Mental Health Clinic in Provo. Patients in the area are handled on an out-patient basis with in-patient needs referred to the Timpanogos Mental Health Clinic.

Professional Personnel

Nephi has three physicians practicing in the area for a physician-to-population ratio of approximately 1 to 750. There are several registered nurses and four licensed practical nurses along with 21 emergency medical technicians in Nephi. Two nurse practioners operate the clinic in Eureka.

TABLE 8.2-28

Selected Schools Information, Millard and Juab Counties, 1978

Area	Total Enrollment	Student-Teacher Ratio	School Capacity	New School Plans
Delta-Hinkley Area (Millard Co. School Dist. --West)				
Grade K-7	760	1/25	800	Expansion of present facilities.
Grade 8-12	481	1/20	650	
Eureka Area (Tintic School Dist.)				
Grades K-7	150	1/15	225	New high school in 1981. Old used as middle school.
Grades 8-12	150	1/15	350	
Nephi Area (Juab Co. School Dist.)				
Grades K-6	598	1/22	600	New middle school planned.
Grades 7-12	446	1/19	600	
Fillmore Area (Millard Co. School Dist. --East)				
Grades K-6	475	1/24	575	New high school needed.
Grades 7-12	431	1/20	600	

Source: Compiled by Architect's/Planners Alliance from data of the State Board of Education.

Fillmore has two full-time physicians for a physician-to-population ratio of 1 to 2,000. There are five full-time physicians and one physician serving part time who visit the area on a regular basis. Five full-time registered nurses, and three licensed practical nurses staff the hospital.

Two dentists practice in Nephi for a dentist to population ratio of 1 to 2,650. In Fillmore there are also two dentists for a ratio of 1 to 2,000. Delta has one full-time and one part-time dentist. The dentist-to-population ratio is thus estimated at 1.5 to 4,500.

Housing

Table 8.2-29 shows housing units in the unincorporated areas of Millard and Juab counties. In both counties, about 90 percent of the existing housing stock is composed of single-family dwelling units with mobile homes making up most of the remainder. Vacancy rates in the different towns of the two counties vary between 1 and 10 percent, except in Eureka, where almost one-third of the existing housing is vacant.

Local Government and Finance

Millard and Juab counties are governed by three-member boards of commissioners. The county governments are responsible for passage and enforcement of local ordinances for unincorporated areas.

Cities within the two county area are governed by five-member councils and mayors. All municipal services and the adoption and enforcement of local ordinances are regulated and administered by these elected officials.

Towns (incorporated areas with less than 800 persons) are governed by five-member boards of trustees. These elected officers function similarly to city councils.

Several special service districts exist in Juab and Millard counties. Services and facilities under the jurisdiction of these special districts include: water conservancy, cemetary, hospital, mosquito abatement, and recreation.

Table 8.2-30 contains a summary of local government finance in Millard and Juab counties.

Quality of Life

A survey, in which 142 residents responded, was conducted in eight communities near the proposed site (Albrecht, 1978). The survey found that 93 percent of the people said they were Mormon, that 73 percent attended church at least once each week, and that 48 percent attended church twice a week. The survey also pointed out that 69 percent have lived in the area most of their lives and over 87 percent indicated great reluctance to leave. Most residents, 88 percent, are interested in community affairs and 77 percent said that they have a role in running the community.

The respondents indicated that the community's physical environment was an important advantage. Ninety-two percent said access to the out of doors was exceptional and 82 percent said the clean air and water were important. Physical beauty of the landscape, however, was rated as exceptional by only 15 percent and as satisfactory by 65 percent of the people.

The respondents were asked to rate their present community as a place to live on a 10-point scale ranging from the "worst possible community" (1) to the "best possible community" (10). The average response was 7.9 which is

TABLE 8.2-29

Housing Units in Incorporated Areas of
Juab and Millard Counties in 1977

	Total Housing Units	Single Family Unit	Mobile Homes	Apartments	Percent Vacant
Millard					
Delta	672	587	65	20	1.3
Fillmore	599	538	45	16	1.7
Hinkley	148	134	13	1	4.1
Holden	140	125	15	0	4.3
Kanosh	132	123	9	0	9.1
Leamington	40	40	0	0	10.0
Lynndyl	43	40	3	0	9.3
Meadows	109	102	7	0	8.3
Oak City	122	104	8	10	4.1
Scipio	138	129	9	0	2.2
Total	2,143	1,922	174	47	
Juab					
Eureka	149	134	13	2	32.9
Levan	174	155	19	0	4.6
Mona	122	112	10	0	3.3
Nephi	1,055	977	56	22	2.7
Total	1,500	1,378	98	24	

Source: Six-County Commissioners Housing Survey, 1978.

TABLE 8.2-30

Local Government Finance: Assessed Valuations, Mill Levies, Taxes Charged, Taxable Sales, Sales Tax, Indebtedness

Taxing Unit	1977 Assessed Valuation	1977 Mill Levy	1977 Taxes Charged	1977 Gross Taxable Sales	1977 Sales Tax Collections	Indebtedness Amount	Purpose	Limit In % of Limit)
Juab County	$18,010,900	13.41	$241,526	$1,984,508	$14,586			
Central Utah Water Dist.	17,274,922	2.00	34,550	N/A	N/A			
Juab School District	15,446,617	42.90	662,660	N/A	N/A	1,885,000	Capital Impr.	92%
Levan Town	480,311	10.00	4,803	225,432	1,657			
Mona Town	639,859	9.00	5,759	122,324	899			
Nephi City	4,969,582	11.00	54,665	13,896,407	102,138			
Tintic School District	2,564,283	51.47	131,984	N/A	N/A	5,000	Capital Impr.	1%
Eureka City	681,597	20.50	13,973	968,597	7,119			
Millard County	$32,984,713	11.00	$362,932	$3,214,104	$23,624			
Oelta-Sutherland-Oasis Cemet.	8,945,991	1.00	8,946	N/A	N/A			
Hinkley-Oeseret Cemet. Oist	2,884,793	1.50	4,327	N/A	N/A			
West Millard Hospital Oist.	18,394,212	4.00	73,577	N/A	N/A			
West Millard Mosquito Oist.	11,830,784	2.00	23,662	N/A	N/A			
Millard Co. Water Oist.	32,984,713	0.00	0	N/A	N/A			
East Millard Hospital Oist.	14,590,501	4.00	58,362	N/A	N/A			
Central Utah Water Oist.	32,984,713	2.00	65,969	N/A	N/A			
Millard School Oistrict	32,984,713	43.75	1,443,081	N/A	N/A	3,428,000	Capital Impr.	80%
Delta City	2,827,148	15.00	42,407	10,874,720	79,929			
Fillmore City	3,291,416	11.50	37,851	9,315,232	68,467			
Hinkley Town	436,260	9.25	4,285	115,167	846			
Holden Town	406,559	7.50	3,049	235,708	1,732			
Kanosh Town	455,743	12.50	5,697	289,800	2,130			
Leamington Town	194,913	11.00	2,144	18,249	134			
Lynndyl Town	255,963	12.00	3,072	84,397	620			
Meadow Town	265,633	13.00	3,453	182,316	1,340			
Oak City Town	283,640	8.00	2,269	51,271	377			
Scipio Town	324,652	10.00	3,247	186,804	1,373			

Source: Compiled by Architects/Planners Alliance from Utah Foundation Reports and Reports filed with the State Auditor.

[a]For taxing year ending June 30, 1977.

N/A Not applicable in that taxing unit. Has no authority to collect sales tax.

near "best community." Two-thirds of the respondents in the sample reported that they feel strongly that the area is about the "best community" they could hope to live in. The remaining third reported that they feel it is about "average." It is significant that only one person indicated strong dissatisfaction with living in the area.

A powerful measure of satisfaction with living in the study area was that the residents strongly identified the local community as "home." Nearly everyone, 99 percent, reported that they considered the town they lived in as "home." Almost nine out of ten (87 percent) of the sample replied that they would be "sorry" or "very sorry" to move out of the study area. Most residents, 70 percent, stated they "approved" of new people moving into the area, while 12 percent disapproved.

The residents of the study area, 65 percent, are convinced that the quality of life is improving. Forty-one percent feel that things are staying about "the same" while only 5 percent answered that their community is deteriorating as a place to reside.

The only disadvantage identified, typical of most small towns, is that opportunities to earn a liveable income are limited. High-paying industrial and service jobs are not available and many of the young people are forced to leave the community to find employment. This out-migration of the young tends to rob a community of its vitality and contributes to stagnation. The people who filled out the questionaire are aware of the problem and suggest that one way to solve it is to encourage economic development. When the respondents were asked whether they support economic growth, 86 percent answered "yes," 8 percent were "neutral," and only 6 percent replied that they were "opposed."

Local perceptions of adequacy and availability of selected goods and services is another indicator of social well-being. Fifty-three percent of the people interviewed felt that shopping opportunities need improvement, but 43 percent felt it is satisfactory. This attitude is reflected in Table 8.2-31.

TABLE 8.2-31

Purchases of Good and Services Within Local Community

Goods and Services Purchased	Percent of Purchases Within Local Community			
	All	Most	Few	None
Furniture and Major Appliances	21	24	22	33
Clothing	7	33	34	26
Banking	50	10	8	32
Medical and Dental Care	40	19	8	33
Appliance Repairs	51	9	10	29
Legal Services	47	12	8	33
Entertainment	18	40	23	18
Auto Purchases and Repairs	31	23	13	34

About one fourth of the residents (26 percent) feel housing needs improvement, and 66 percent felt it is satisfactory.

Fifty-seven percent of the people rated law enforcement as satisfactory and 33 percent said it needs improvement. A majority of the local people (56 percent) think health services are satisfactory and 27 percent say they need

improvement. Only 44 percent of the people think schools are exceptional and 43 percent felt schools were satisfactory. The perception of cultural activity is that 57 percent feel it is satisfactory and 30 percent feel it needs improvement. Most residents of the area recognize possible trade-offs between having environmental economic changes and living in a small town atmosphere.

14. Probable Future Environment Without the Project

a. Air Quality

Occasional violation of the National Ambient Air Quality Standards (NAAQS) for particulate matter can be expected to continue due to wind blown dust. No other violations of NAAQS are anticipated since neither industrial nor population growth is expected to rapidily increase. The Delta-Lynndyl area will probably remain a Class II airshed under the Federal Prevention of Significant Deterioration Regulations.

b. Paleontology

Increased visitor use of the paleontological resources in the area will result in losses due to collecting and vandalism.

c. Soils

Important changes in soils are not expected during the next 35 years. This assumption is based on historic use of this resource, and current trends towards improved management of surface resources which include soils, vegetation, and water resources.

d. Water Resources

Additional water development will occur in the Delta area. It is anticipated that the DMAD water companies will be able to devise methods to bring their eight deep wells into full production to provide supplemental irrigation water for this service area.

The Central Utah Canal Company will probably continue service as present.

e. Vegetation

Little change in vegetation is expected in the regional setting, as well as at the project area.

f. Animal Life

It is expected that the human population in the Millard-Juab County area will increase at a rate of 2.14 percent per year. This increase, although not as rapid as with the proposal, will place increased demands on the wildlife resources of the region. In addition, an expanding population of humans along the Wasatch Front will continue to place added demands on the wildlife within the region.

As a result of increased hunting, fishing, and other recreational pursuits, wildlife populations within the area could decrease slightly within the next 35 years. Populations of game animals (fish, upland game, waterfowl, and deer) could decline slightly as they are subjected to increased hunting and fishing pressure.

Continued urban expansion and population increase at Cedar City and St. George will alter wildlife habitat. Further development at Cedar City will infringe upon the habitat of the endangered Utah prairie dog. Development at St. George will destroy some habitat for the gila monster and the desert tortoise. The environment along other portions of the transmission lines will remain essentially unchanged.

g. Cultural Resources

Cultural resources will continue to be subject to vandalism and weathering and will face the inevitable loss due to these factors. Vandalism to the resource will increase along with rising recreational use of the area.

h. Recreation and Aesthetics

As population grows within the region, and as completion of highways I-15 and I-70 reduces travel time and improves access to the region, recreational demands will increase. The greatest increases will probably be in hunting, fishing, and off-road vehicle activities. Increased demand could result in some loss of hunter and fisherman success and satisfaction. Establishment of any wilderness areas within the region would increase primitive, unconfined types of recreation such as hiking and horseback riding.

It is anticipated that as limited funds permit, government agencies will provide additional recreational developments to meet growing outdoor recreation pressures.

Some degradation of the visual resource is expected to occur within the regional setting from oil, gas, and geothermal exploration and development, mining, grazing, recreational development, and an anticipated increase in ORV activity. However, much of the region will likely retain its open space scenic values.

i. Land Uses

Land uses within Millard County would remain basically unchanged, without the project, with agriculture dominating the use of land. The DMAD Companies are not presently using their full supplemental rights to ground water, but are in the process of developing that use. The full development would allow the companies to increase their irrigated land to about 58,000 acres from the present about 51,000 acres.

Several agricultural areas along the transmission line would continue to see additional urbanization. These areas occur primarily in the vicinity of Cedar City, Utah.

The BLM wilderness review and USFS RARE II studies may result in Congress designating wilderness areas within the region.

j. Human Resources

Data showing the expected growth without the proposal for selected components is presented in Table 8.2-32 for the years 1982, 1986, and 1990.

Although the Millard and Juab County area is expected to continue its present growth trend, it would be at a much lower rate than if IPP were built at the Lynndyl site.

TABLE 8.2-32

Future Environment Without the Project

Socioeconomic Components and Impact Areas		Numbers Expected in: 1982	1986	1990	Estimated Average Growth Rate Per Year
Population:	Delta/Lynndyl Area	5,750	6,330	6,830	>2%
	Eureka Area	890	940	970	1%
	Nephi Area	6,310	7,160	7,830	>2%
	Fillmore Area	3,850	4,070	4,270	1%
Employment:	Millard County	3,020	3,240	3,330	>1%
	Juab County	2,100	2.270	2,440	>1%
Per Capita Income:					
	Millard County	$4,310	$4,380	$4,455	<1%
	Juab County	$3,980	$4,105	$4,235	<1%
Education	Delta-Lynndyl				
	Number of Students	1,440	1,770	2,140	5%
	% of Existing Capacity	99.1	122	148	
	Eureka				
	Number of Students	290	300	315	1%
	% of Existing Capacity	68	70	74	
	Nephi				
	Number of Students	1,210	1,435	1,665	4%
	% of Existing Capacity	106	126	146	
	Fillmore				
	Number of Students	1,180	1,480	1,800	>5%
	% of Existing Capacity	119	149	182	
Housing (Permanent Units)					
	Millard County	2,350	2,570	2,840	>2%
	Juab County	1,670	1,920	2,200	>3%

ENVIRONMENTAL PROFILE RAILROAD SPUR AND WATER SUPPLY PIPELINE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- , Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

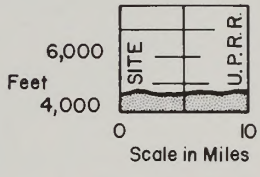
POLITICAL SUBDIVISIONS BY NAME

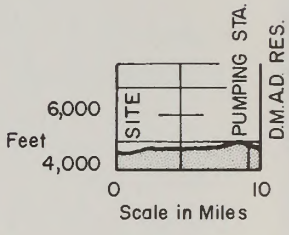
HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

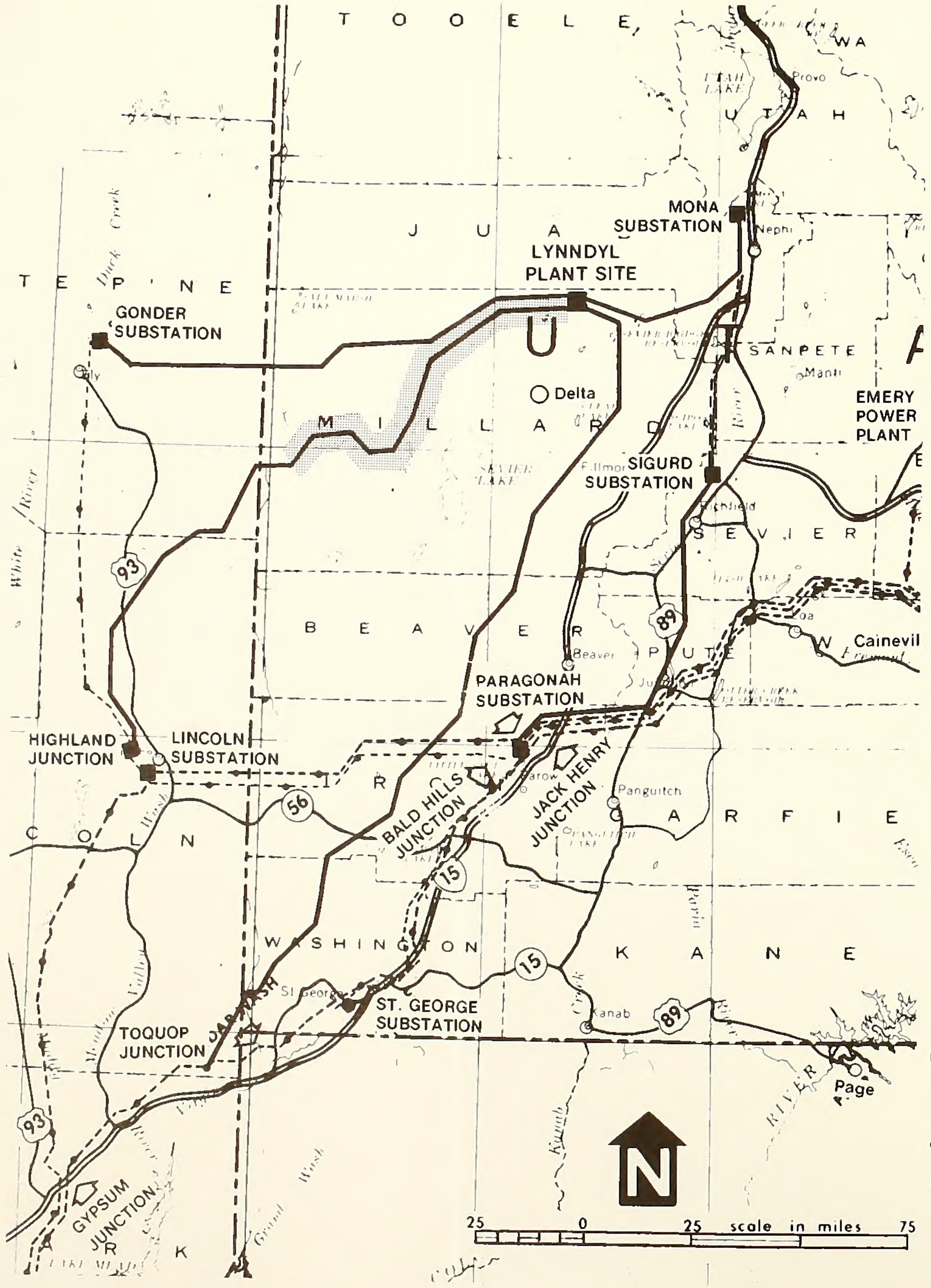
PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance





	CD	CD
VEGETATION	6	6
SOIL TYPES	2	2
EROSION HAZARD	C	C
SCENIC QUALITY	B / F/M	F / B / F
VISUAL ZONE	L / H	L / H
SENSITIVITY	NONE	NONE
EXISTING CONTRAST	R	R
LAND USE	SEVIER DESERT	SEVIER DESERT
PLANNING UNIT	NONE	NONE
A. O. S. C.	MILLARD UTAH	MILLARD UTAH
POLITICAL SUB.	NONE	NONE
SPECIAL ANIMALS	NONE	NONE
GAME ANIMALS	NONE	NONE
CULTURAL RESOURCES	L	L
PALEONTOLOGY	NONE	NONE

FIGURE 8.2-A



LEGENO

VEGETATION
- F- Foresl
- MB- Mounlain Brush
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- R- Riparian
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- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
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- S- Mounlain and Foolhills

EROSION HAZARO
- 1- Slight-Moderale
- 2- Moderale-High
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SCENIC OUALITY
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- R- Open Range
- F- Forest
- U- Urban
- A- Agricullure
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PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LO-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Foresl Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Olhers- By Name

POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPO- Ulah Prairie Oog
- OT- Oesert Tortoise Concentralion
- F- Threatened or Endangered Fish
- G- Gila Monsler
- R- Raptor Concentration Area
- BF- Polenlial Black-tooted Ferret
- BT- Bendire's Thrasher and Gilded Flicker
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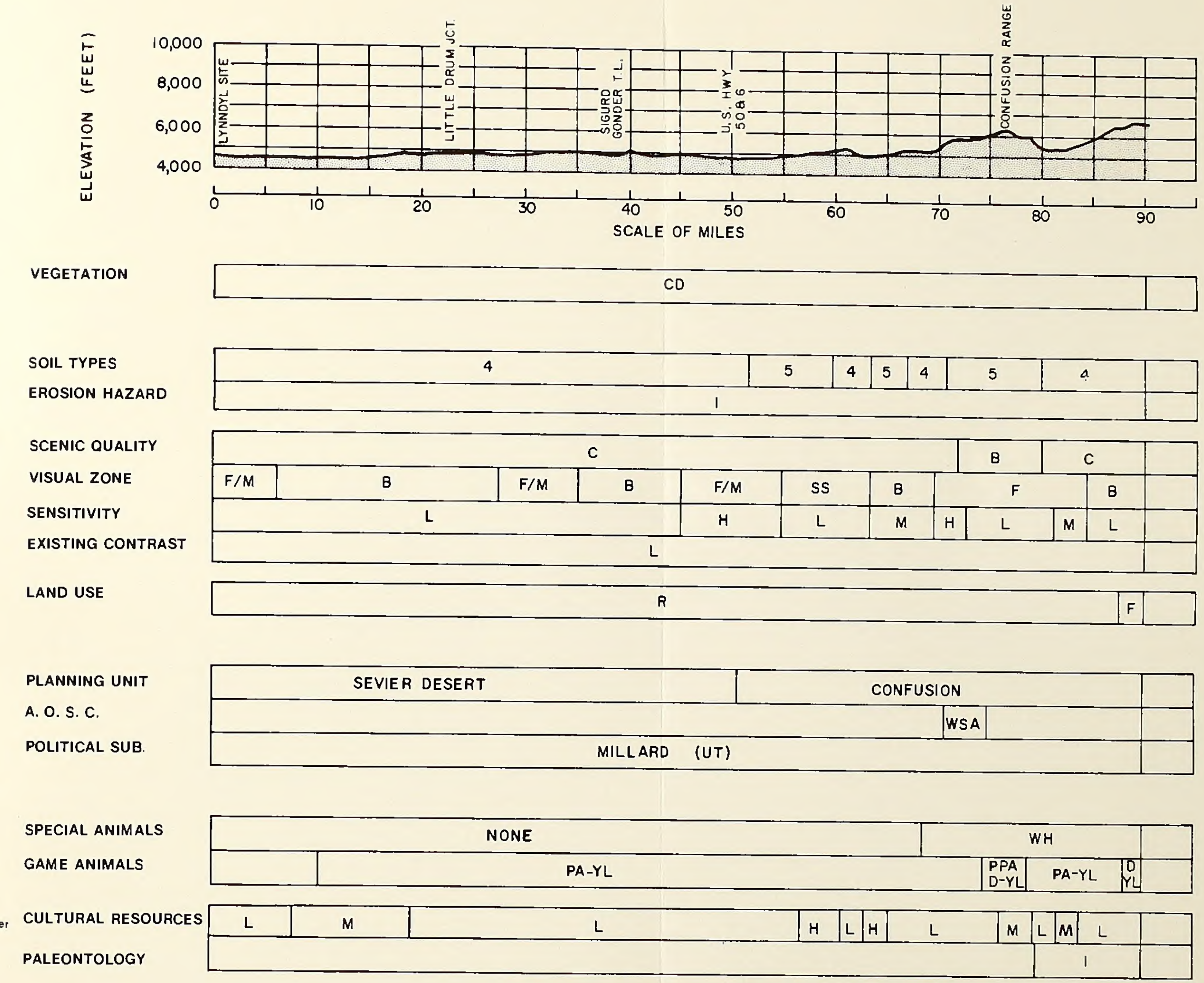
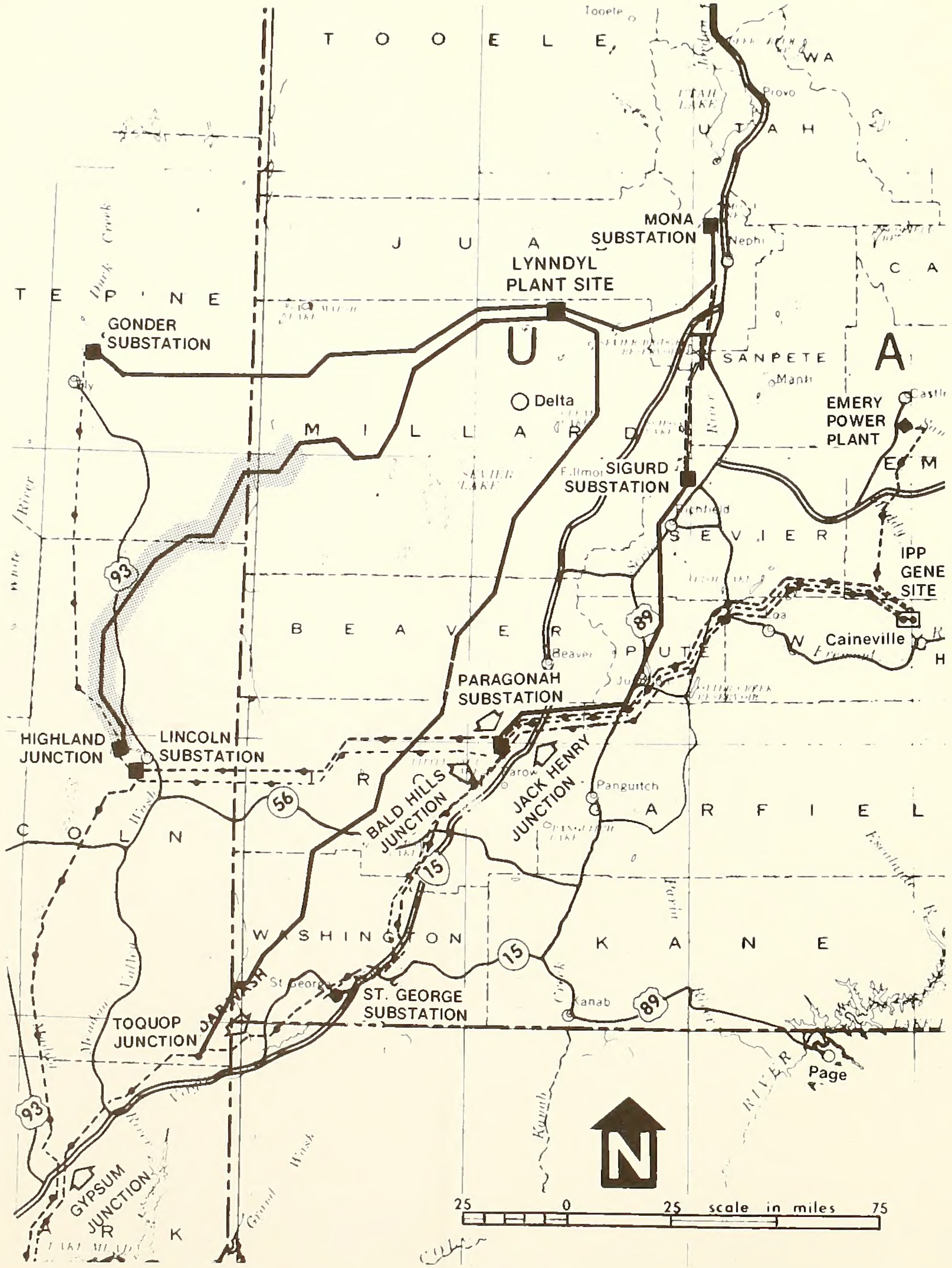


ENVIRONMENTAL PROFILE: SOUTHERN CALIFORNIA TRANSMISSION SYSTEM

LYNNDYL TO HIGHLAND JUNCTION
Part 1

FIGURE 8.2-B



LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
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SOIL TYPE
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- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
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- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
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- B- Medium
- C- Low

VISUAL ZONES
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- SS- Seldom Seen

SENSITIVITY
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- L- Low

EXISTING MANMADE CONTRAST
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- M- Medium
- L- Low

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- U- Urban
- A- Agriculture
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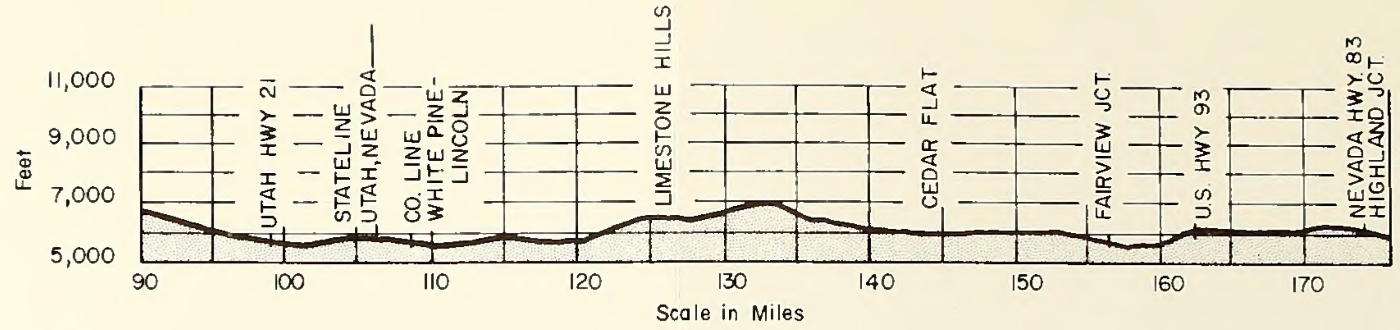
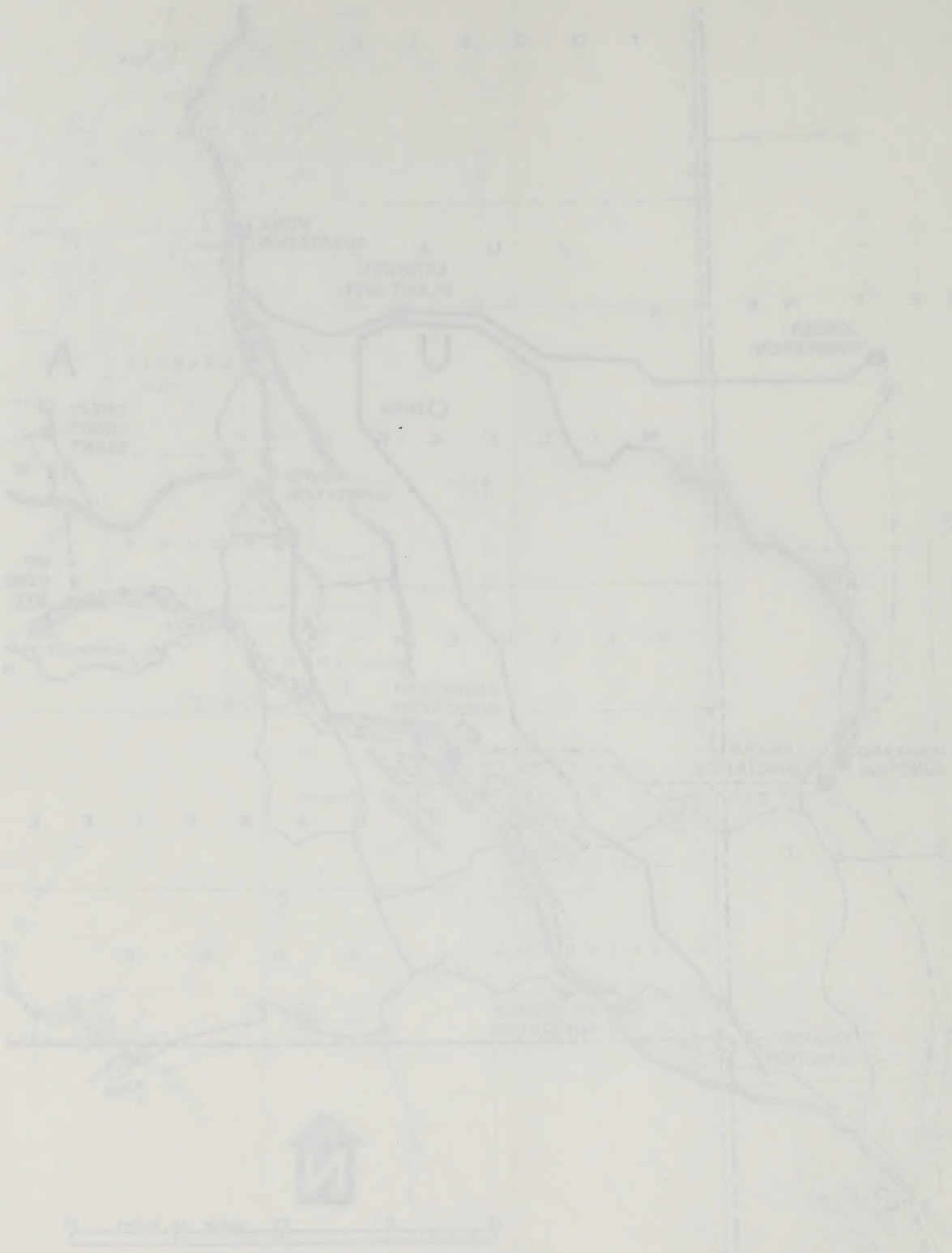


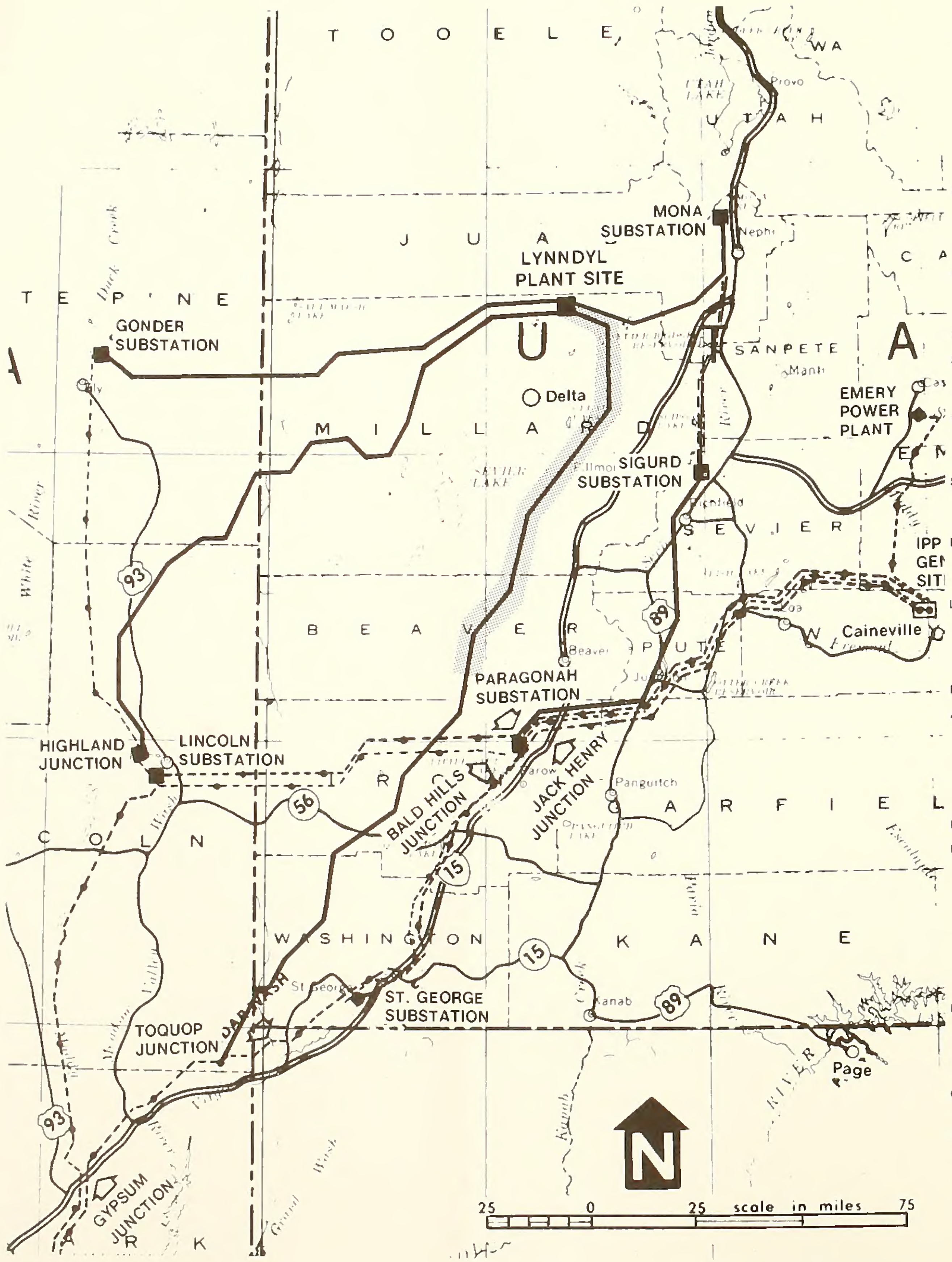
VEGETATION	CD / PJ / CD / PJ / CD / PJ
SOIL TYPES	5 / 4 / 5 / 4 / 5
EROSION HAZARD	1
SCENIC QUALITY	C / B / C / B /
VISUAL ZONE	B / F/M / B / F/M / B / F/M /
SENSITIVITY	L / M / L / B /
EXISTING CONTRAST	L / H / L / M
LAND USE	R / F / R / F / R / F
PLANNING UNIT	CONFUSION / MORIAH / LAKE VALLEY / WILSON CREEK
A. O. S. C.	WHITE PINE, NEVADA
POLITICAL SUB.	MILLARD, UTAH / / LINCOLN, NEVADA
SPECIAL ANIMALS	WH / R / WH / / WH
GAME ANIMALS	D-YI / D Y,L / PA-YL D-W / D-W / PA-YL, D-W / D-W /
CULTURAL RESOURCES	L / M / L / M / L / M / L / M / L / M / L
PALEONTOLOGY	/ 2 (1) / 3 / 1 /

ENVIRONMENTAL PROFILE: SOUTHERN CALIFORNIA TRANSMISSION SYSTEM

LYNNDYL TO HIGHLAND JUNCTION
Part 2

FIGURE 8.2-B





LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD- Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA- BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

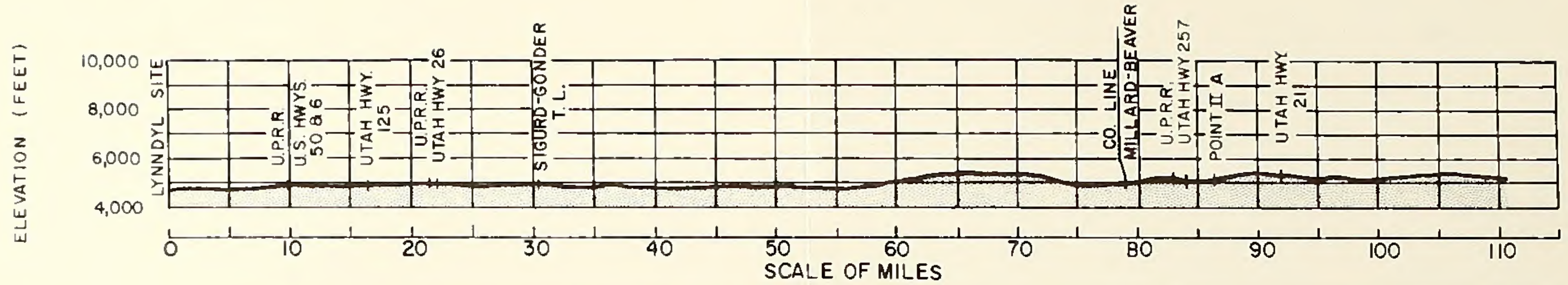
POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance

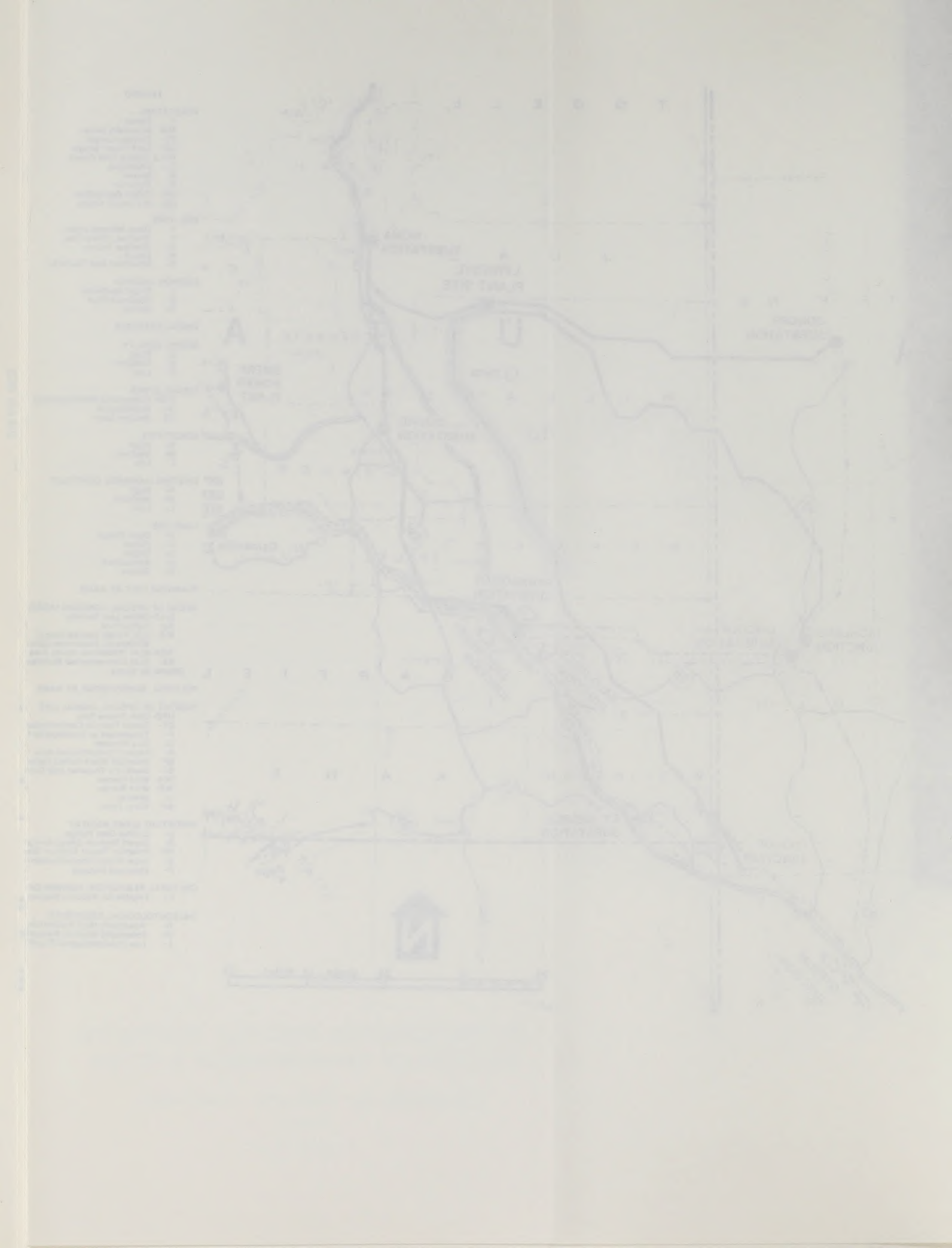


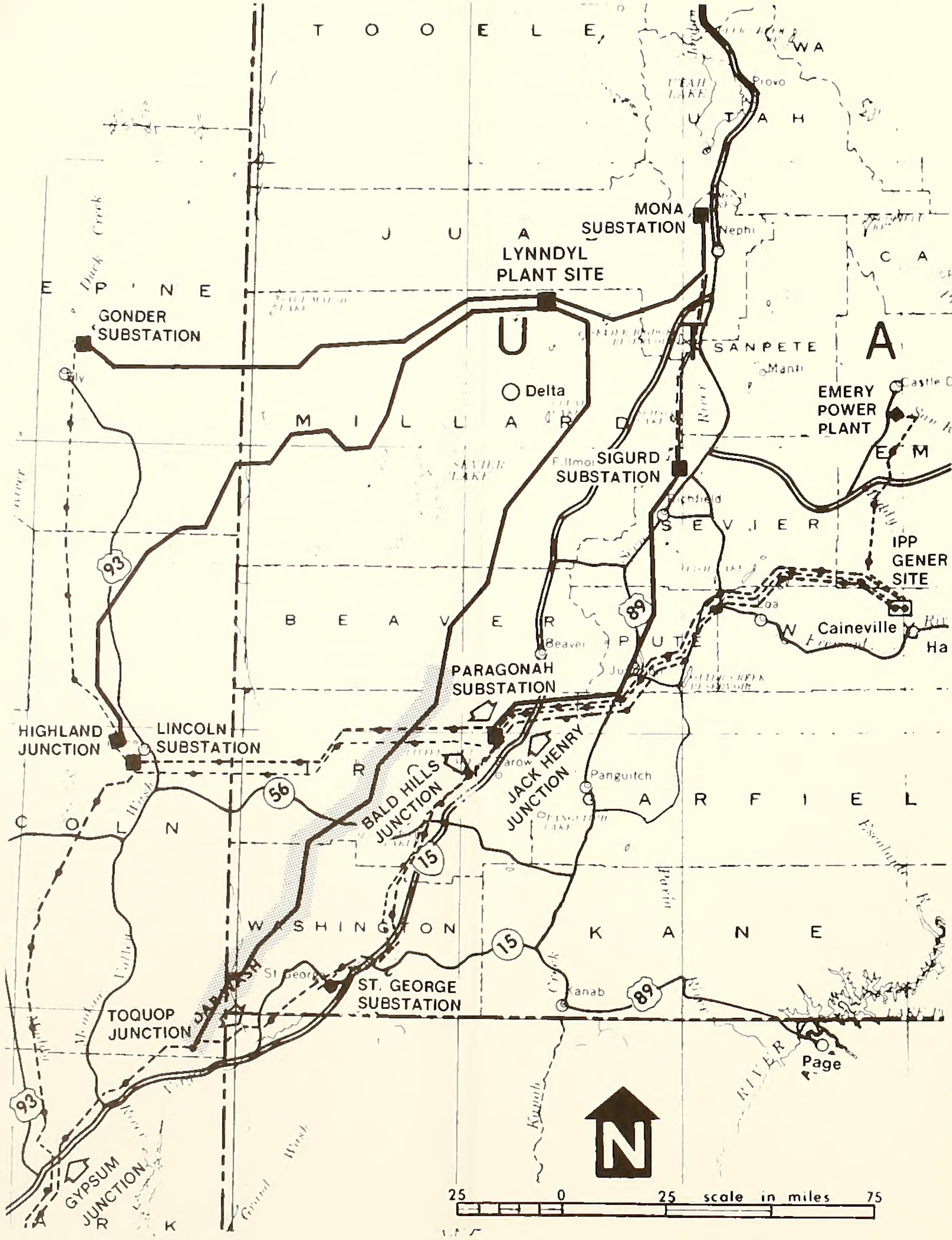
VEGETATION	CD								
SOIL TYPES	6	4	6	4					
EROSION HAZARD	2	1	2	1					
SCENIC QUALITY	C								
VISUAL ZONE	F/M	B	F/M	B					
SENSITIVITY	L	M	L	M	L	M	L	H	M
EXISTING CONTRAST	L	M	L	M	L	M			
LAND USE	R								
PLANNING UNIT	SEVIER DESERT	WARM SPRINGS	BEAVER (UT)						
A. O. S. C.	N O N E								
POLITICAL SUB.	MILLARD (UT)	BEAVER (UT)							
SPECIAL ANIMALS									
GAME ANIMALS	N O N E	A							
CULTURAL RESOURCES	L	M	L	M	L	M	L	M	L
PALEONTOLOGY	2 (2)	4 (1)	9 (4)	10 (2)	1				

ENVIRONMENTAL PROFILE: SOUTHERN CALIFORNIA TRANSMISSION SYSTEM

LYNNDYL TO TOQUOP JUNCTION
Part 1

FIGURE 8.2-C





LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CO- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HO- Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
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- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

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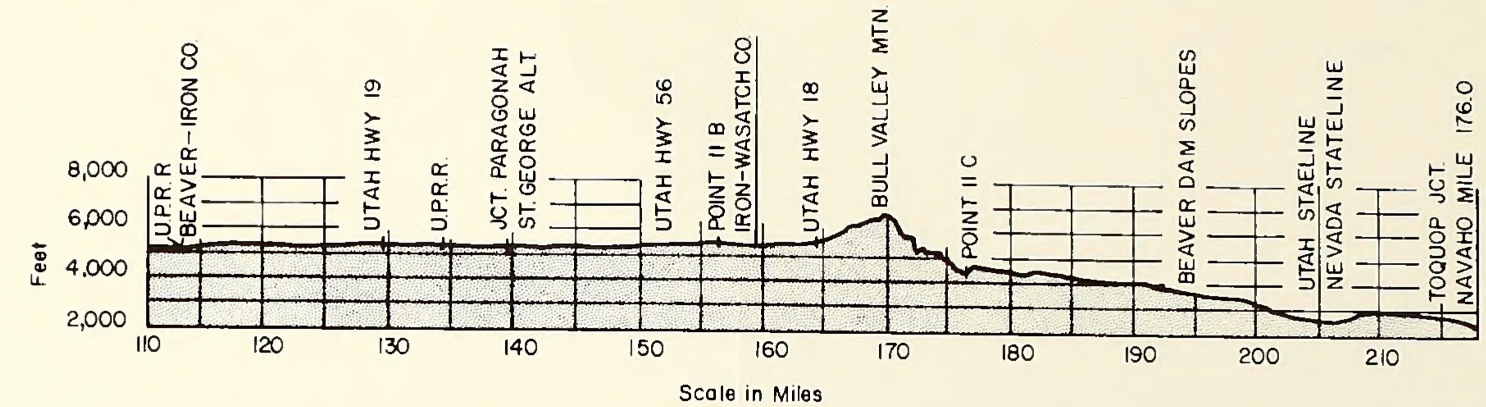
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habitat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance

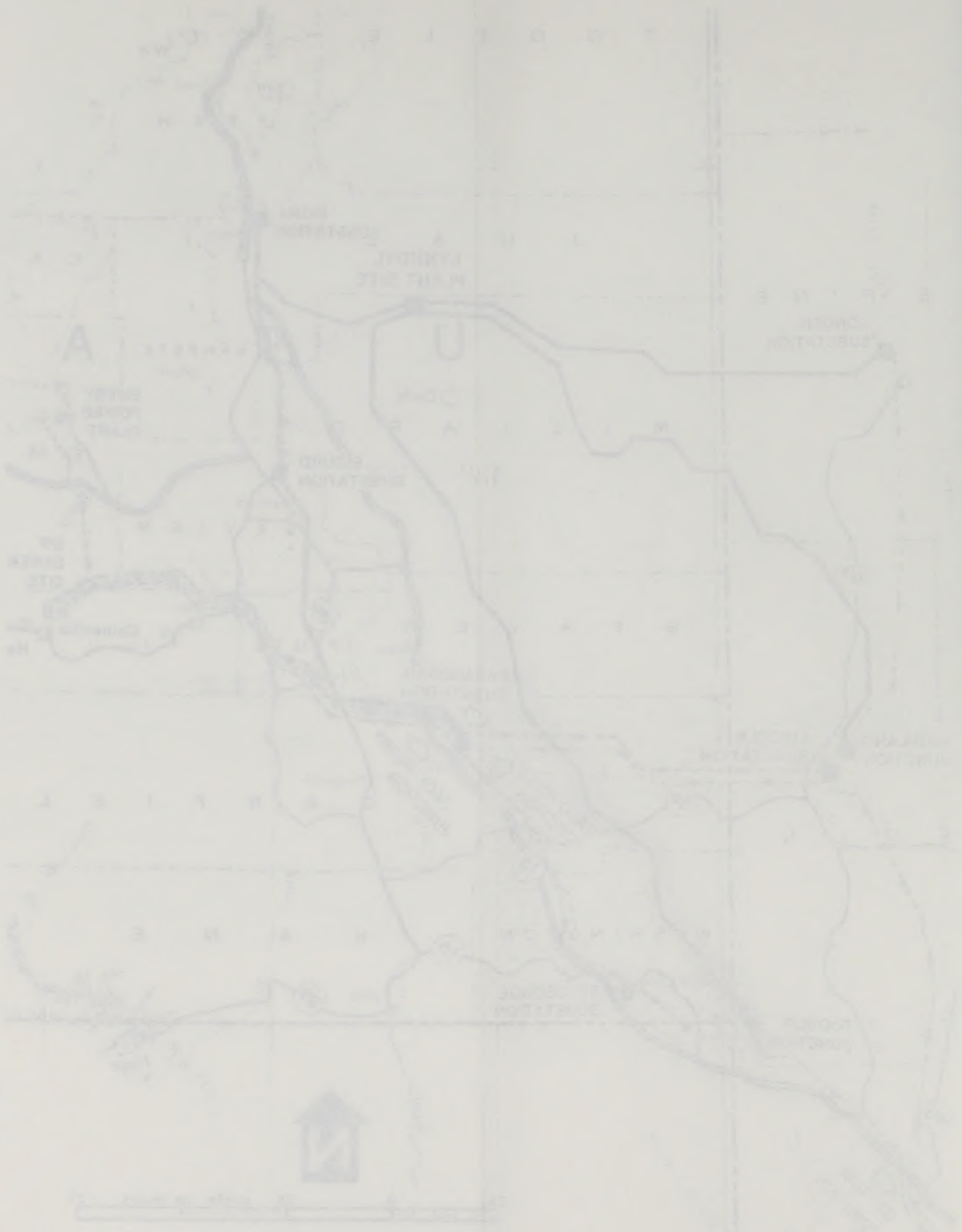


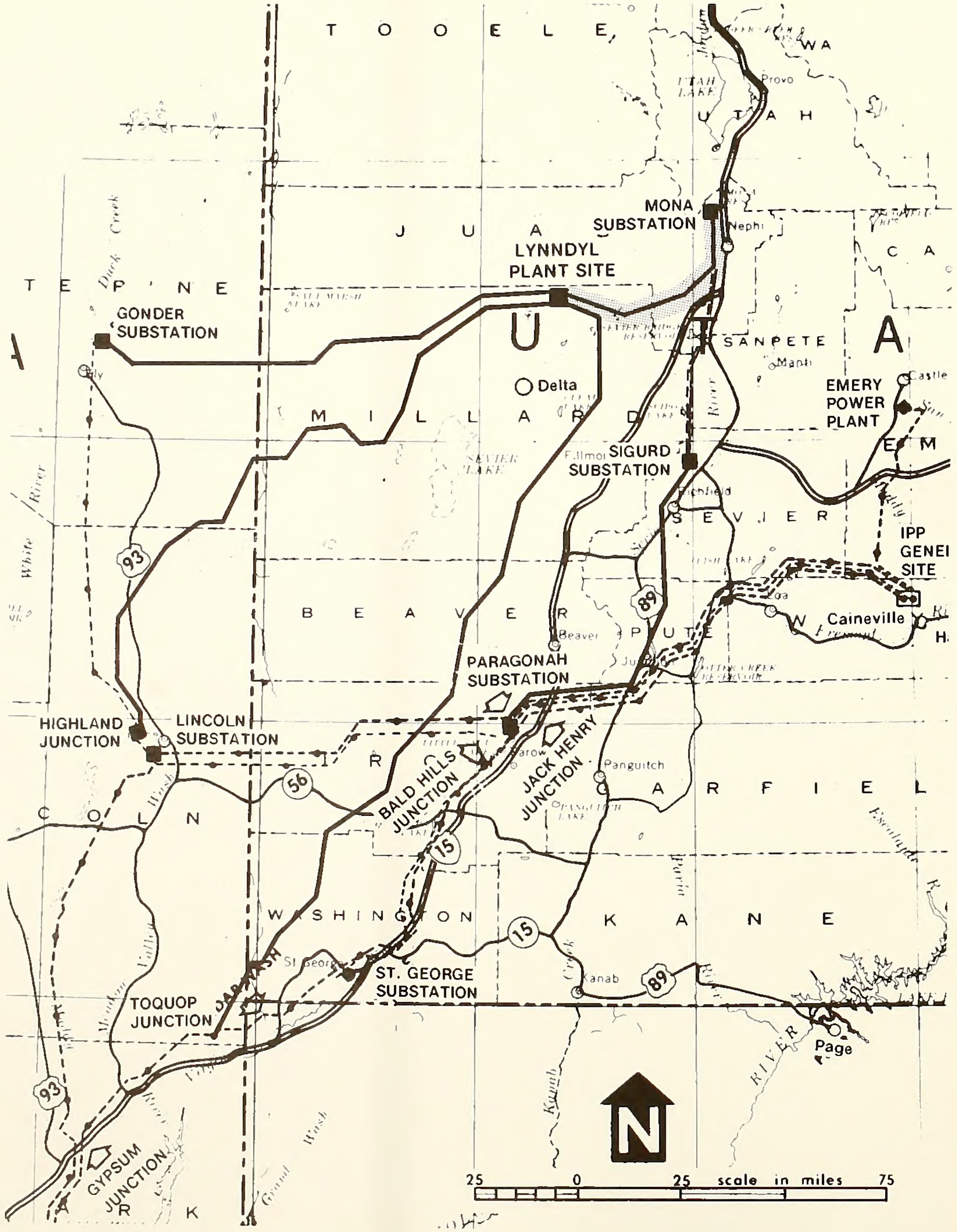
VEGETATION	CD / PJ / HD
SOIL TYPES	5 / 4 / 5 / 7 / 4
EROSION HAZARD	1 / 2 / 1
SCENIC QUALITY	C / B
VISUAL ZONE	B / SS / F/M / SS / B / F/M / B / SS
SENSITIVITY	M / L / M / H / M / L
EXISTING CONTRAST	M / L
LAND USE	R / F / R
PLANNING UNIT	BEAVER / BUCKSKIN-MUD SPRING / VIRGIN RIVER / ENTERPRISE / VIRGIN RIVER / CALIENTE
A. O. S. C.	NONE
POLITICAL SUB.	BEAVER / IRON, UTAH / WASHINGTON, UTAH / LINCOLN, NEV.
SPECIAL ANIMALS	WH / DT
GAME ANIMALS	PA-YL / D-W / D-R / D-W
CULTURAL RESOURCES	M / L / M / L / M / L / M / L / M / L / M / L / M / L / M / L / M / L
PALEONTOLOGY	3 / 10 (5) / 5 (4)

ENVIRONMENTAL PROFILE: SOUTHERN CALIFORNIA TRANSMISSION SYSTEM

LYNNDYL TO TOQUOP JUNCTION Part 2

FIGURE 8.2-C





LEGEND

VEGETATION
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- PJ- Pinyon Juniper
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- 3- Shallow, Rocky
- 4- Desert
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EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
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- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

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- Others- By Name

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- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

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- D- Critical Deer Range
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- PB- Potential Desert Bighorn Sheep Range
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CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
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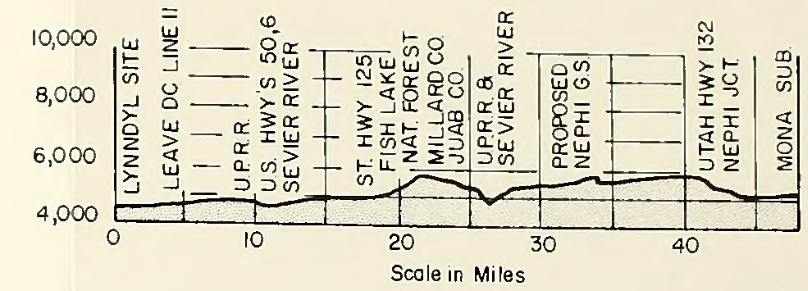


VEGETATION: CD | UA | CO | PJ | CD | PJ | CD | PJ | CD | PJ

SOIL TYPES: 6 | 5 | 4 | 5

EROSION HAZARD: 2 | 1

SCENIC QUALITY: C | B | C

VISUAL ZONE: F/M | SS | F/M | SS | F/M | B

SENSITIVITY: L | H | M | L | M | L | M

EXISTING CONTRAST: L | M | L | M

LAND USE: R | A | R | F | A | R | A | F | R

SEVIER DESERT — FISH LAKE NATIONAL FOREST

PLANNING UNIT: (Sevier Desert) | TINTIC | (Fish Lake National Forest) | TINTIC

A. O. S. C.: N O N E

POLITICAL SUB.: MILLARD, UTAH

SPECIAL ANIMALS: N O N E

GAME ANIMALS: | D-W | E, D-W, SG

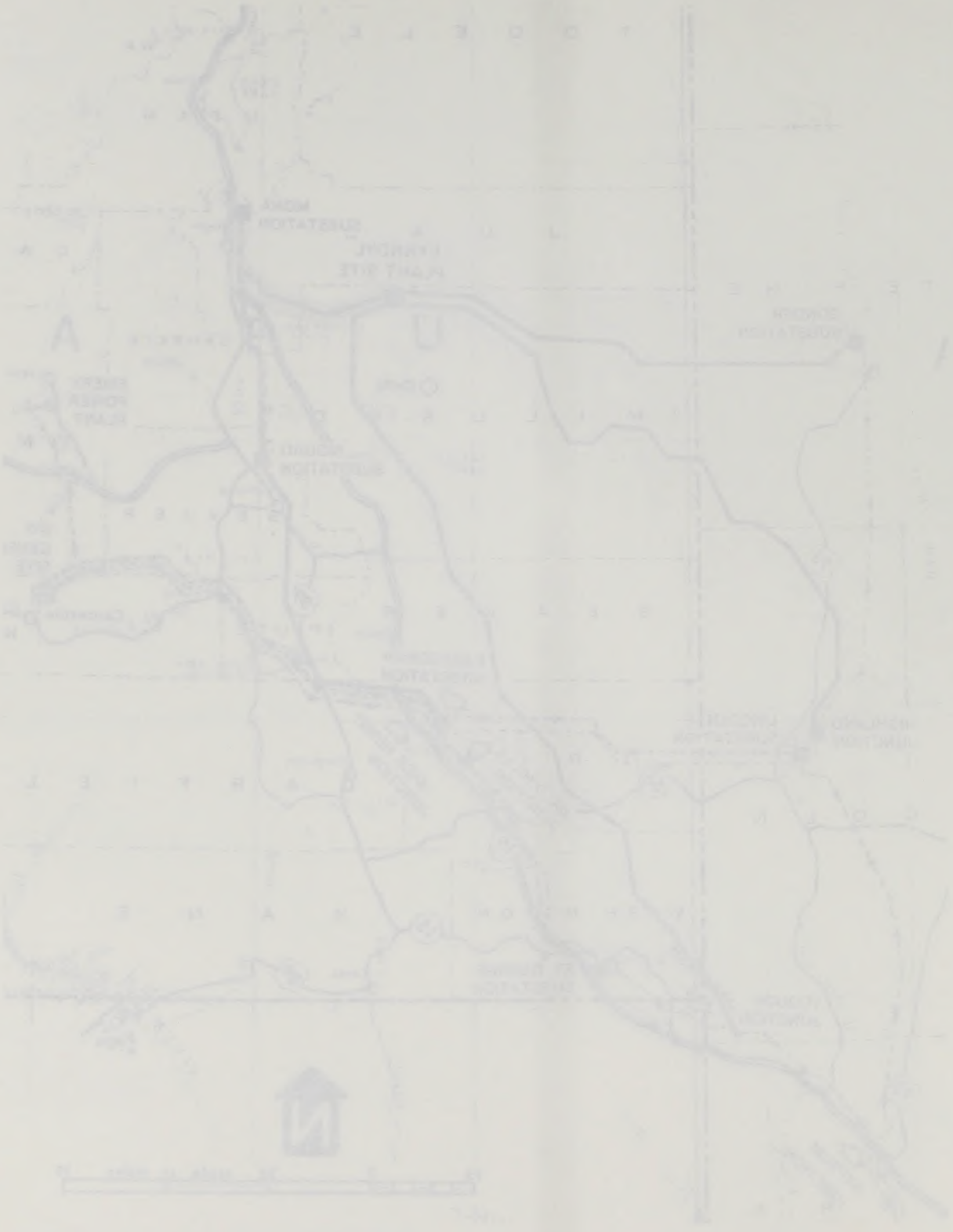
CULTURAL RESOURCES: L | M | L

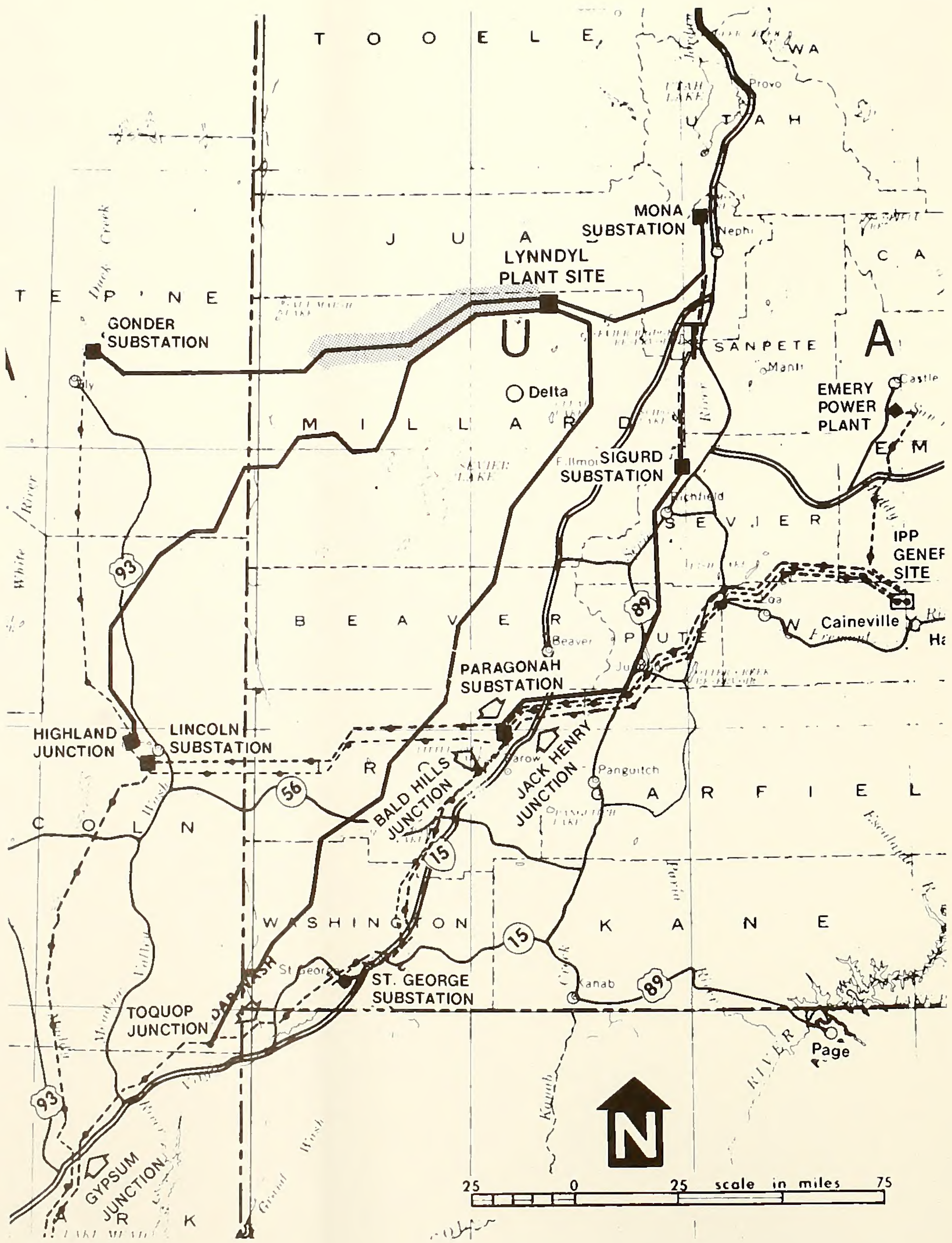
PALEONTOLOGY: I (I) | O

ENVIRONMENTAL PROFILE: UTAH TRANSMISSION SYSTEM

LYNNDYL TO MONA SUBSTATION

FIGURE 8.2-D





LEGEND

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- PJ- Pinyon Juniper
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- B- Barren
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- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
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- C- Low

VISUAL ZONES
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- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (ADSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

POLITICAL SUBDIVISIONS BY NAME

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- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
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- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
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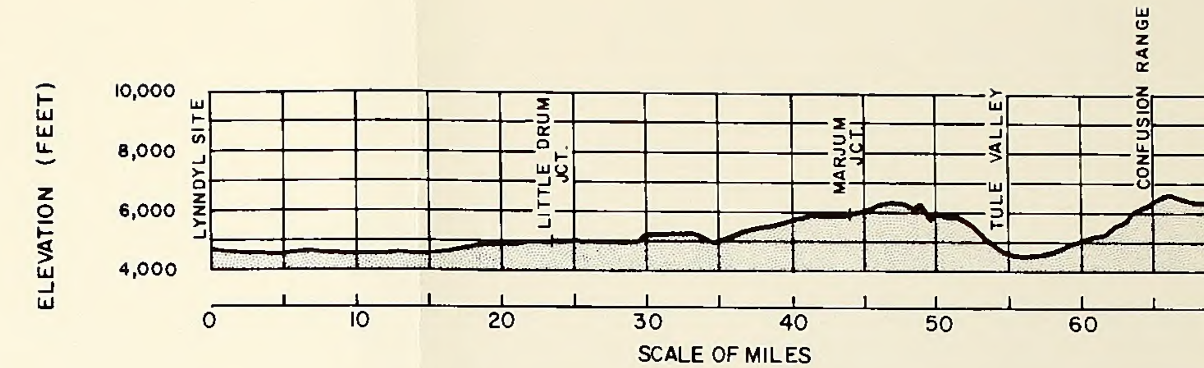


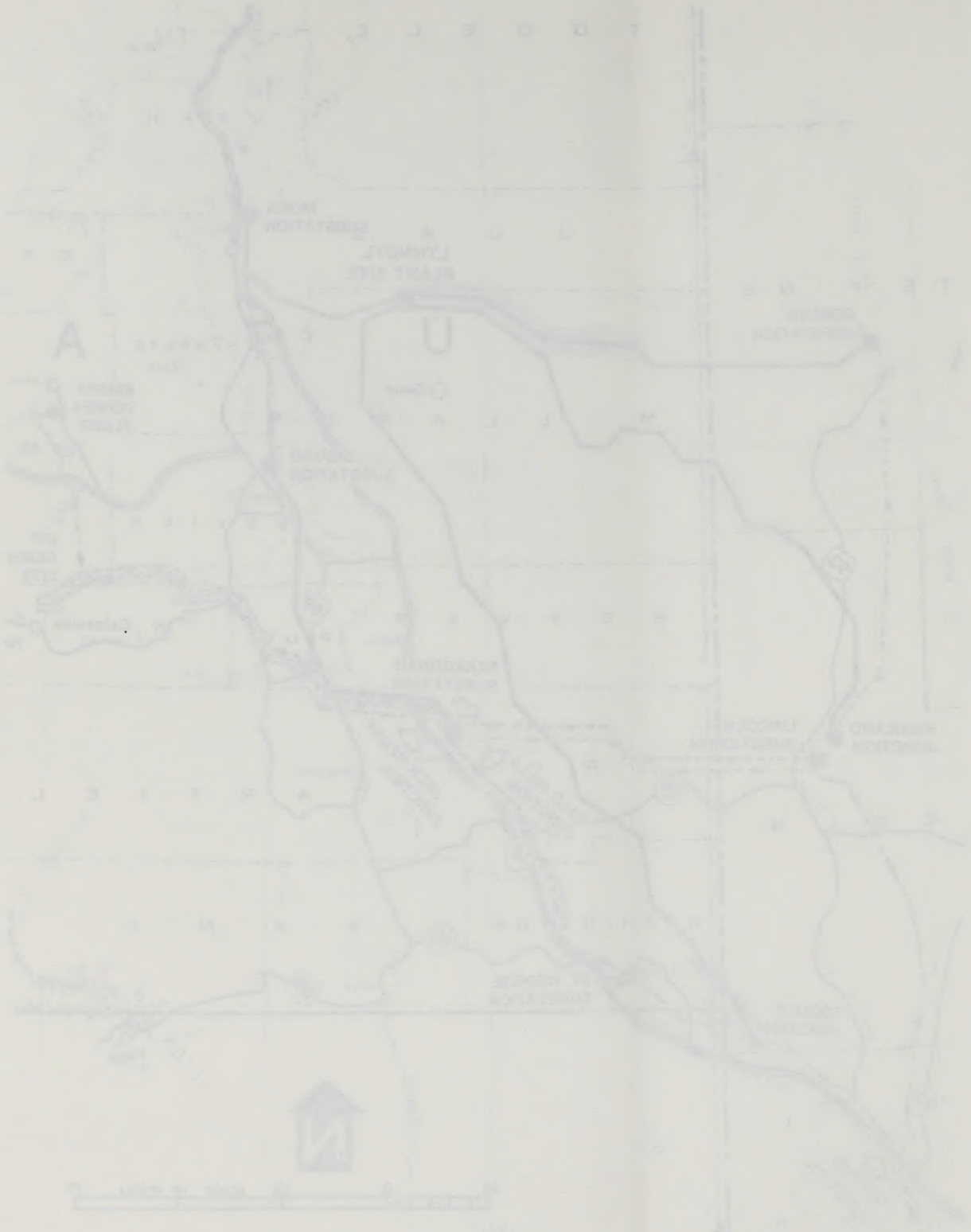
VEGETATION	CD
SOIL TYPES	4
EROSION HAZARD	1 | 2 | 1 | 2 | 1
SCENIC QUALITY	C | B | C | B | C
VISUAL ZONE	F/M | B | F/M | B | SS
SENSITIVITY	| H | M | L
EXISTING CONTRAST	L | H | M | H
LAND USE	R
PLANNING UNIT	SEVIER DESERT | CONFUSION
A. O. S. C.	
POLITICAL SUB.	MILLARD (UT)
SPECIAL ANIMALS	NONE | WH
GAME ANIMALS	NONE
CULTURAL RESOURCES	L | M | L | M | L | M | L | M | L | M | L
PALEONTOLOGY	8 (5) | 2

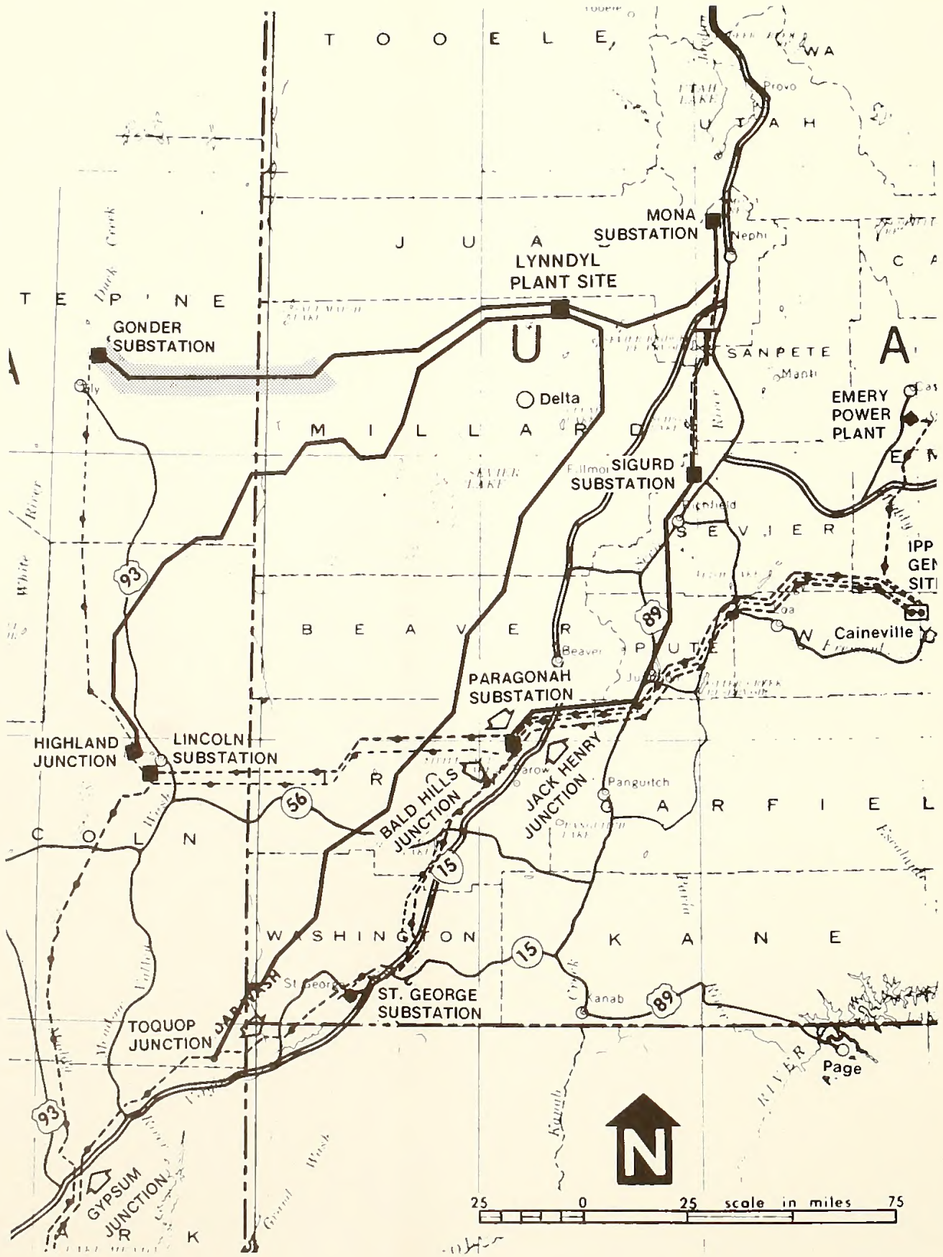
ENVIRONMENTAL PROFILE: UTAH TRANSMISSION SYSTEM

LYNNDYL TO GONDER SUBSTATION

Part 1

FIGURE 8.2-E





LEGEND

VEGETATION
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- C- Chaparral
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- HD- , Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
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- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
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- B- Medium
- C- Low

VISUAL ZONES
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SENSITIVITY
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- M- Medium
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EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
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IMPORTANT GAME HABITAT
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CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
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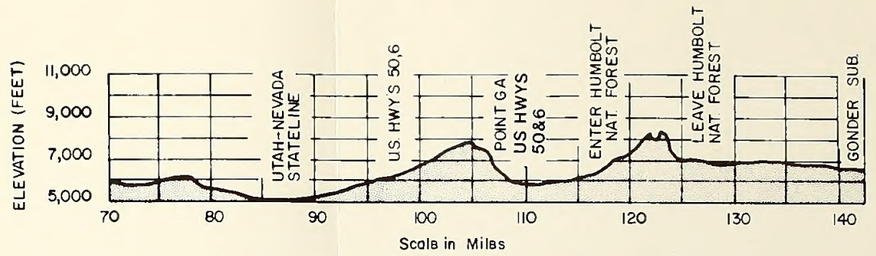


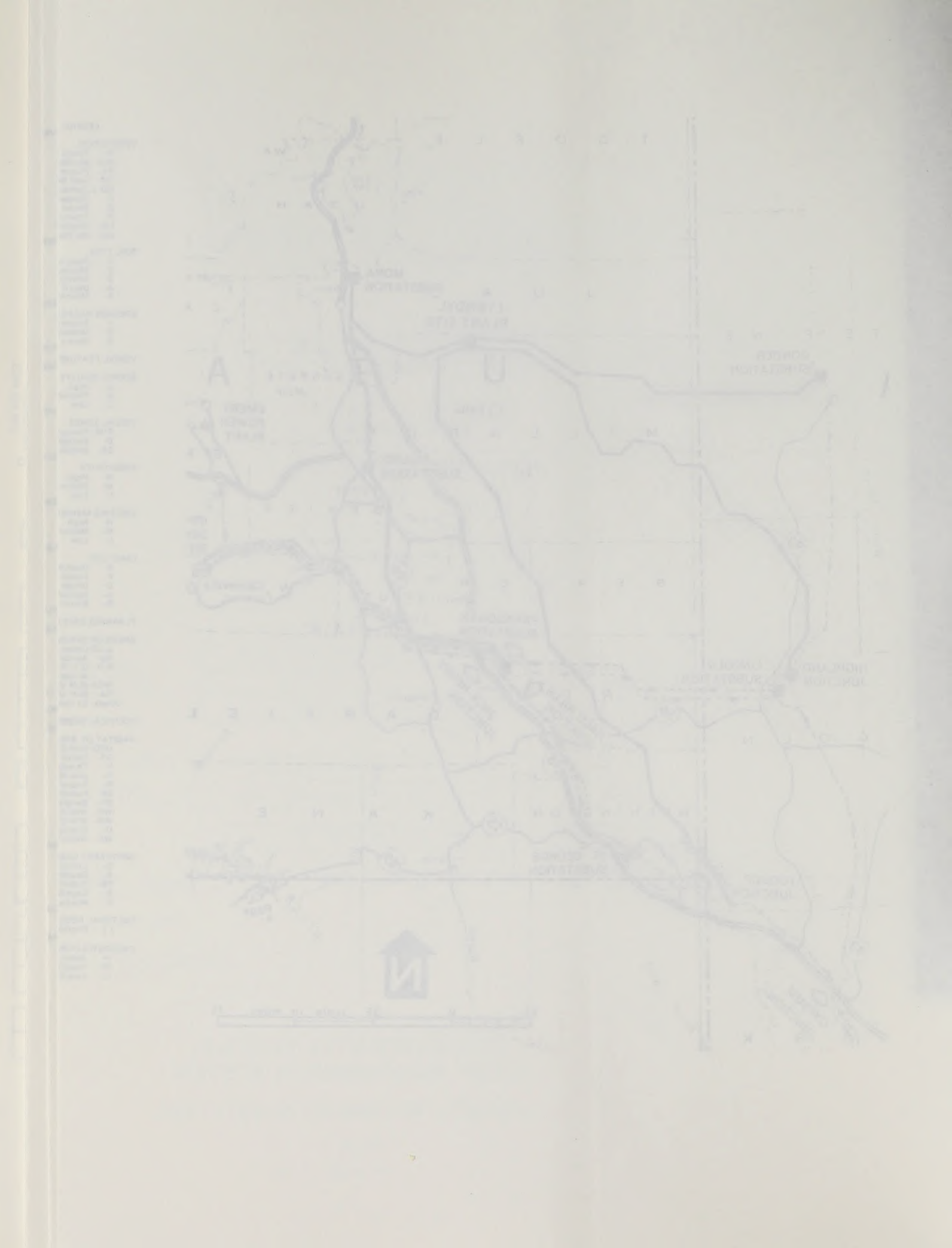
VEGETATION	CD				PJ	CD	S	CD	PJ	CD			
SOIL TYPES	4	5	4		5		4		5				
EROSION HAZARD	1				2			2	1				
SCENIC QUALITY	C					A	C		B	C			
VISUAL ZONE	B	SS	F/M										
SENSITIVITY	L	M			H		M		L	M	H		
EXISTING CONTRAST	M				H		M		H				
LAND USE	R				W	F	R		F	R			
PLANNING UNIT	CONFUSION	MORIAH							ELY DISTRICT (HUMBOLT NAT. FOREST)	STEPTOE			
A. O. S. C.					RU								
POLITICAL SUB.	MILLARD, UTAH	WHITE PINE, NEVADA											
SPECIAL ANIMALS	WH												
GAME ANIMALS	PA-YL					D-YL		PA SG		E,D-W	D-W		
CULTURAL RESOURCES	L	M	L	M	NONE			M	L	M	H	M	L
PALEONTOLOGY	NONE												

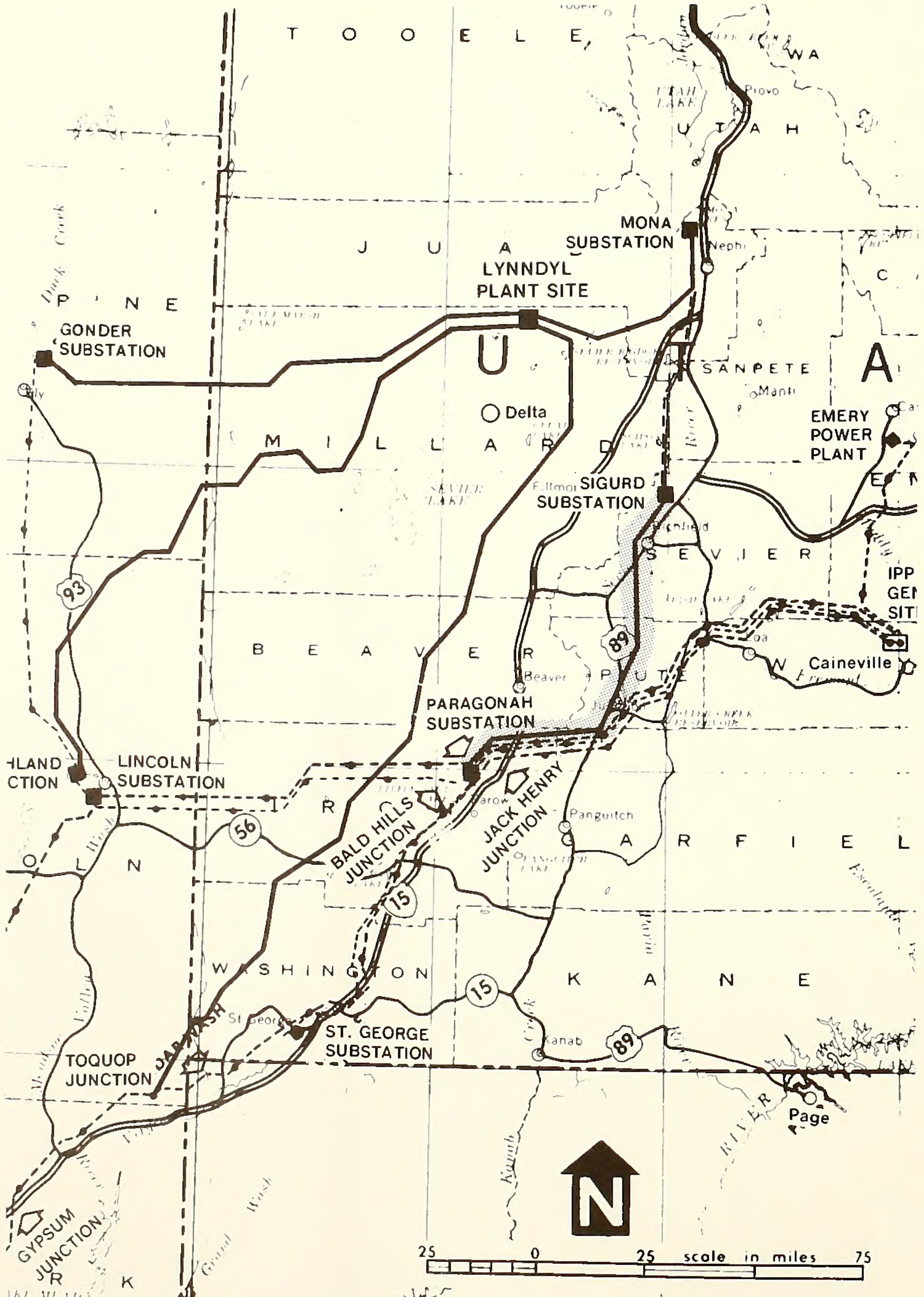
ENVIRONMENTAL PROFILE: UTAH TRANSMISSION SYSTEM

LYNNDYL TO GONDER SUBSTATION

Part 2

FIGURE 8.2-5





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- 2- Moderate-High
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VISUAL FEATURES

SCENIC QUALITY
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- B- Medium
- C- Low

VISUAL ZONES
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LAND USE
- R- Open Range
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PLANNING UNIT BY NAME

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- H- Potentially High Paleontological Significance
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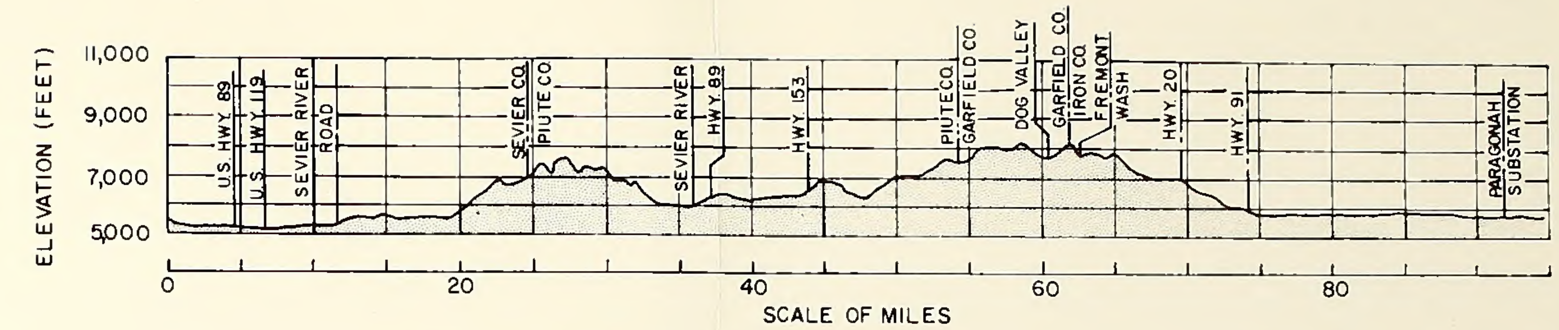


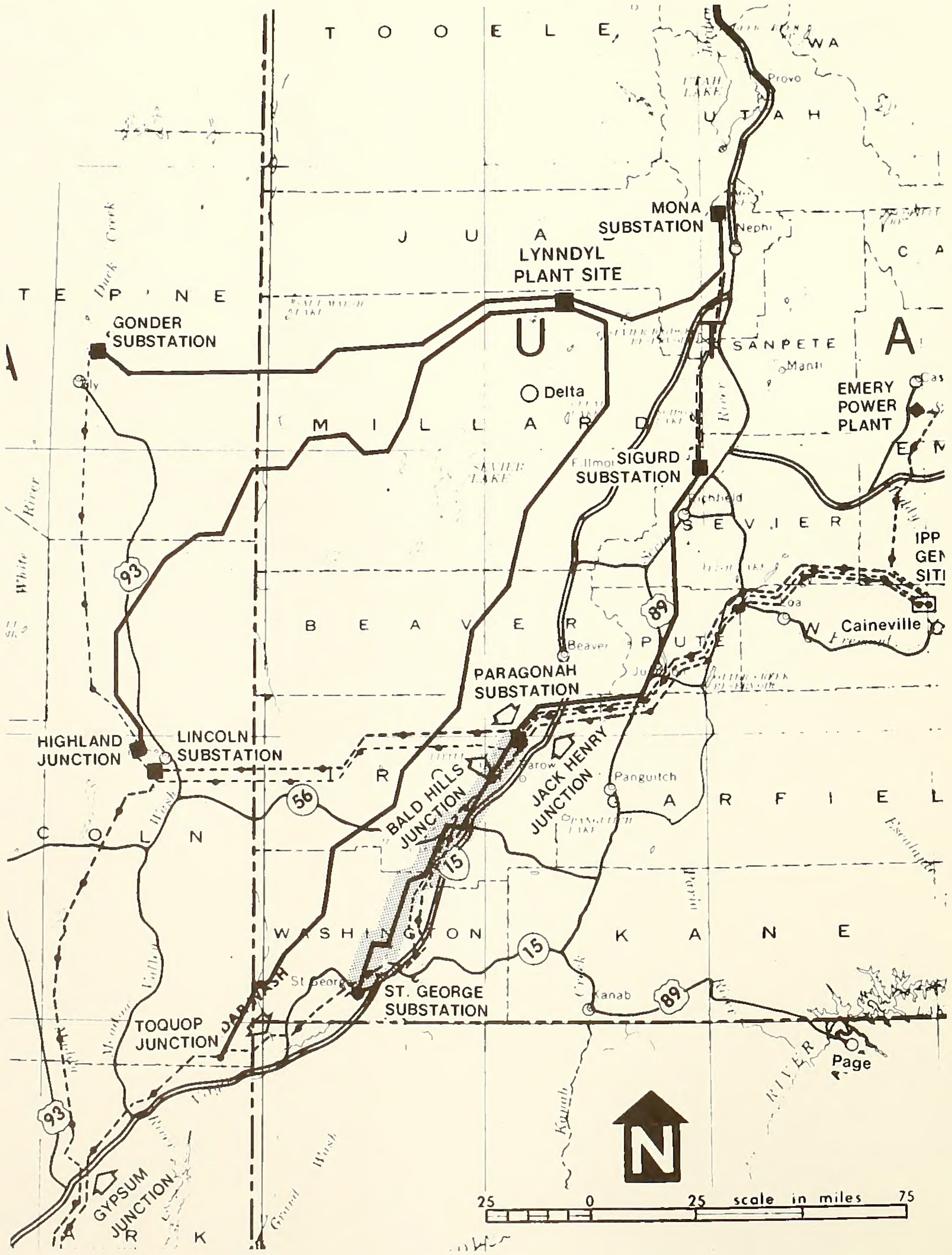
VEGETATION	CD	P-J	CD	P-J	CD		
SOIL TYPES	4	5	4				
EROSION HAZARD	1	2	1	2	1		
SCENIC QUALITY	C	B	C	B	C		
VISUAL ZONE	F/M	B	F/M		F/M	B	F/M
SENSITIVITY	H	M	H	M	L	M	H
EXISTING CONTRAST	H						
LAND USE	R	F					
PLANNING UNIT	NORTH SEVIER	PIUTE	BEAVER DIST.	BUCKSKIN-MUD SPRING	CEDAR		
A. O. S. C.							
POLITICAL SUB.	SEVIER (UT)	PIUTE (UT)	GARFIELD (UT)	IRON (UT)			
SPECIAL ANIMALS			SG		UPD		
GAME ANIMALS		C D-W		D-W			

CULTURAL RESOURCES	L	M	L	M	L	NONE	M	L	M	L	M	L
PALEONTOLOGY	12	7	15	24								

ENVIRONMENTAL PROFILE: UTAH TRANSMISSION SYSTEM

SIGURD TO PARAGONAH

FIGURE 8.2-F



LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

ERDSIDN HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC DUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CDNTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Dpen Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CDNCERN (ADSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Dthers- By Name

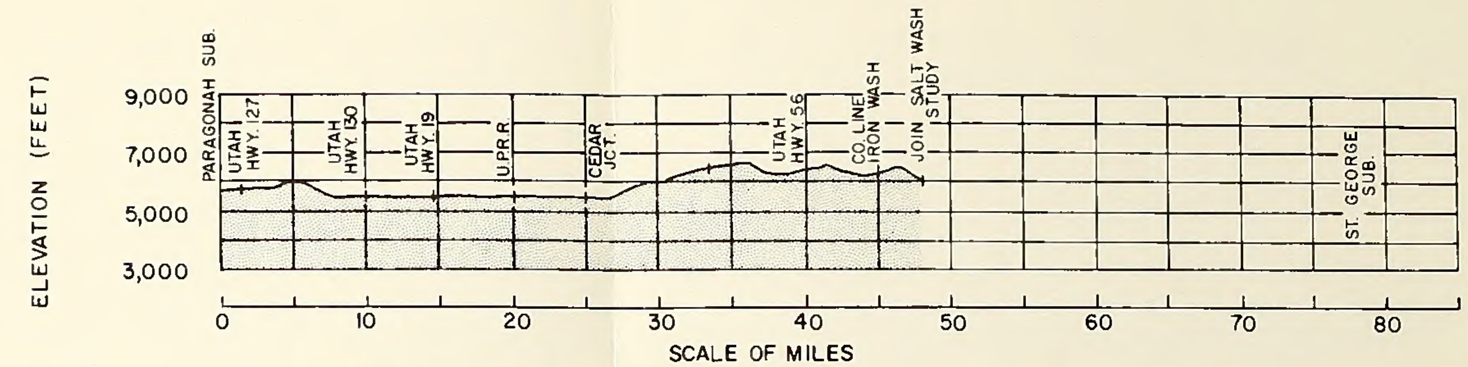
PDLITICAL SUBDIVISIONS BY NAME

HABITAT DF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monsler
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPDRTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESDURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEDNTOLDGICAL RESDURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance



VEGETATION	CD	PJ	CD	PJ							
SOIL TYPES	4	1	4	5							
EROSION HAZARD	1										
SCENIC QUALITY	C	B									
VISUAL ZONE	F/M	SS	F/M								
SENSITIVITY	H	M	L	M							
EXISTING CONTRAST	M	H									
LAND USE	F	UA	R	F							
PLANNING UNIT		BUCKSKIN-MUDSPRINGS	ENTERPRISE								
A. O. S. C.	N O N E										
POLITICAL SUB.	IRON (UT)	Washington (UT)									
SPECIAL ANIMALS	UPD										
GAME ANIMALS		D-W									
CULTURAL RESOURCES	L	M	L	M	L	M	L	M	L	M	L
PALEONTOLOGY	14	23	21	19 (I)							

ENVIRONMENTAL PROFILE: UTAH TRANSMISSION SYSTEM

PARAGONAH TO ST. GEORGE

FIGURE 8.2-G

D. ENVIRONMENTAL IMPACTS

A. Introduction

This section describes the Lynndyl site's probable environmental impacts which would significantly affect the quality of the human environment.

Some portions of the Southern California Transmission System would be used for either the Salt Wash site proposal or the Lynndyl alternative site. The common segments are: 1) Highland Junction (near Pioche, Nevada) to Victorville, California Converter Station, Line 1 and 2) Line 2 beginning at Toquop Junction, (about 20 miles from the southwest corner of Utah and adjacent to the existing Navajo-McCullough transmission line) and extending southwesterly to Victorville, California. The Salt Wash Site portion of this Environmental Statement, (Volume I) details the impacts which would result from these segments.

Analysis of impacts is commensurate with the expected magnitude, intensity, duration and incidence of impacts.

1. Climate

The effect of power plant plumes on climate is being investigated. Technical reports (Parungo, et al., 1978a; Parungo, et al., 1978b; and Pueschel, et al., 1978) tend to support the theory that fly ash released from a coal-fired power plants can act to form condensation nuclei and ice nuclei in clouds. The probability of precipitation near the plant can thereby be increased. At present, however, there are insufficient data to determine the degree to which climate could possibly by altered by power plant plumes or to determine whether climate would be significantly impacted.

2. Impacts to Air Quality From Power Plant Emissions

a. General

Estimated pollutant concentrations resulting from the Lynndyl plant were obtained from computerized diffusion models used by the H. E. Cramer Company (Bowers, et al., 1978a). (A description of the diffusion models is presented in Appendix III-1.) Stack parameters and emissons data, surface meteorological data, and mixing depth data are shown in Appendix VIII.3-1 to VIII.3-3, respectively.

Surface meteorological data used in the modeling were obtained from the National Climatic Center for the Delta Airport. The data were collected during the 6-year period from January 1949 through December 1954. Because there are no elevated terrain features between Delta and the Lynndyl site and there do not appear to be any local influences that would make the data non-representative of the Lynndyl site. The data from the Delta airport were considered suitable for use in the diffusion-model calculations.

Salt Lake City, Utah and Grand Junction, Colorado are the locations nearest the Lynndyl site for which detailed mixing depth data are available. The data from these two locations have been previously analyzed and found to be essentially the same for the median early morning mixing depths. However, the median afternoon mixing depths from Salt Lake City, when compared with limited mixing depth data from Dugway Proving Grounds, were found to be more representative of the area than the afternoon mixing depth data from Grand

Junction. Therefore The Salt Lake City median mixing depths (listed in Appendix VIII.3-3) were used in the modeling study (Bowers, et al., 1978a).

The stack parameters and emission data are based on worst-case emissions and, as defined in the 1977 Clean Air Act Amendments, "good engineering practice" stack height. The proposed plant is assumed to operate at full load except for downtime. Downtime is expected to reduce plant generation to about 85 percent of the annual maximum. Consequently, the stack parameters used to calculate plume rise were based upon maximum load, while the annual average pollutant emission rates are the worst-case emission rates reduced to 85 percent of the full-load rates.

b. National New Source Performance Standards (NSPS)

Table 8.3-1 compares the expected stack emissions with New Source Performance Standards (NSPS). When burning worst-grade coal, the plant's stack emissions would be less than NSPS for sulfur dioxide and particulates and would equal the nitrogen dioxide standard.

c. Prevention of Significant Deterioration (PSD) Increments and National Ambient Air Quality Standards (NAAQS)

In addition to the NSPS presented on Table 8.3-1, the IPP plant must not exceed the Prevention of Significant Deterioration (PSD) increments for sulfur dioxide (SO_2) and particulate matter and must not combine with other existing pollution sources to cause violations of the National Ambient Air Quality Standards (NAAQS) for SO_2, particulate matter, and nitrogen dioxide (NO_2). The PSD Class I and Class II increments are presented on Table 8.3-2 along with the NAAQS for the three criteria pollutants emitted by power plants. At present there are no PSD increments for NO_2.

Potential stack emissions from the Lynndyl plant were modeled to estimate three possible environmental impacts: 1) the plant's impact on any point in the surrounding area; 2) the plant's impact on existing and potential Class I areas; and 3) the plant's possible interactions with other pollutant sources (Bowers, et al., 1978a).

(1) Impact on Surrounding Class II Areas

The surface meteorological data used in the long-term (annual) modeling (Appendix VIII.3-2) were combined with seasonal mixing heights (Appendix VIII.3-3) to calculate the annual concentrations in the area surrounding the IPP Lynndyl site. The hourly meteorological inputs that were determined to cause the "worst-case" concentrations are presented in Appendix VIII.3-4.

The annual, 24-hour and 3-hour average SO_2, annual and 24-hour particulate matter, and annual NO_2 concentrations were calculated and transcribed to isopleths shown in Appendix VIII.3-4. The maximum estimated concentrations, and the location where they occurred, are presented in Table 8.3-3. Emissions from the Lynndyl plant are not expected to violate the PSD Class II increments for SO_2 and particulate matter nor the NAAQS for NO_2 in the area surrounding the plant.

(2) Impact on Existing or Potential Class I Areas

In order for pollutant emissions from the IPP Lynndyl plant to affect existing and potential Class I regions in southeastern Utah, the IPP plume

Table 8.3-1

Comparison of IPP Stack Emission to
State of Utah and Federal New Source Performance Standards

Pollutant	Emission Standard (lb/million BTU)	IPP Plant Emissions[a] (lb/million BTUs)	Percent of Standard
Sulfur Dioxide	1.2	[b]0.155	13
Particulates	0.1	[b]0.019	19
Nitrogen Dioxide	0.7	0.7	100

Source: IPP, 1978.

[a]Based on 0.79 percent sulfur, 10.1 percent ash, and 10,200 BTU/lb coal.

[b]Based on 100 percent level, 90 percent SO_2 removal, and 99.75 percent particulate removal.

Table 8.3-2

National Ambient Air Quality Standards and
Prevention of Significant Deterioration

Pollutant	Average Time	Primary Standards	Secondary Standards	Class I Increment	Class II Increment
Sulfur Dioxide (SO_2)	Annual Average	80 $\mu g/m^3$		2 $\mu g/m^3$	20 $\mu g/m^3$
	24-hour	365 $\mu g/m^3$		5 $\mu g/m^3$	91 $\mu g/m^3$
	3-hour		1300 $\mu g/m^3$	25 $\mu g/m^3$	512 $\mu g/m^3$
Nitrogen Dioxide (NO_2)	Annual Average	100 $\mu g/m^3$	Same as primary		
Suspended Particulate Matter	Annual Geometric Mean	75 $\mu g/m^3$	60 $\mu g/m^3$	5 $\mu g/m^3$	19 $\mu g/m^3$
	24-hour	260 $\mu g/m^3$	150 $\mu g/m^3$	10 $\mu g/m^3$	37 $\mu g/m^3$

Source: Clean Air Act Amendment, August, 1977.

Table 8.3-3

Estimated Concentrations Due to
IPP's Lynndyl Site Impact on Surrounding Areas

Averaging Time	Concentration ($\mu g/m^3$)			Location	
	SO_2	Particulate Matter	NO_2	Distance in miles (KM)	Bearing (DEG)
Annual	1.83	0.23	8.28	5.0 (8.0)	045
24-Hour	50	6	--	2.5 (4.0)	023
3-Hour	138	--	--	4.0 (6.7)	045

Source: Bowers, J.F. et al "Calculated Air Quality Impact of the Emissions from the proposed IPP Power Plant at the Lynndyl Site." August 1978.

must travel over 90 miles and must pass over the Wasatch Plateau, which extends to about 11,000 feet (3,350 meters) above mean sea level. Concentration calculations at the closest Class I area in southeastern Utah, Capitol Reef National Park, show that the maximum 1-hour ground level SO_2 concentration calculated at the nearest boundary of Capitol Reef would be only 4 micrograms per cubic meter (Bowers, et al., 1978a). This is below the 24-hour and 3-hour Class I increments for SO_2. The only existing or potential Class I region which the Lynndyl power generating station might affect is the Deep Creek Mountains potential Class I region located 66 miles northwest of the plant site.

In the impact analysis of the Lynndyl power generating complex on the Deep Creek Mountains area, the worst-case 24-hour and 3-hour meteorological periods were selected. These periods had wind speeds greater than 3 miles per hour (1.5 meters per second) for 3 or more hours in the Deep Creek Mountains direction, poor plume dilution, and wind directions that minimized the travel distance between the Lynndyl site and the Deep Creek Mountains. No attempt was made to take into account the plume travel time from the Lynndyl site to the Deep Creek Mountains nor chemical transformations or other removal processes. Thus, the calculation procedures were biased toward overestimation at the longer downwind distances. The meteorological input data are listed in Appendix VIII.3-5.

The results of the annual and short-term concentration calculations for the Deep Creek Mountains potential Class I region are presented in Table 8.3-4. The calculated maximum 3-hour SO_2 concentration of 17.3 micrograms per cubic meter would be 69 percent of the 3-hour Class I SO_2 increment, while the calculated maximum 24-hour SO_2 concentration of 2.8 micrograms per cubic meter would be 56 percent of the 24-hour Class I SO_2 increment. Similarly, the calculated maximum 24-hour particulate concentration of 0.4 micrograms per cubic meter would be about 4 percent of the 24-hour Class I increment for particulates. Thus, the results of the short-term concentration calculations described in this section, in combination with the results of the annual concentration calculations described previously, indicates that the power plant at the Lynndyl site would meet Class I requirements at all existing and potential Class I regions.

(3) Possible Interaction With Other Sources

There are no significant stationary sources of air pollutants in the vicinity of the Lynndyl site (Bowers, et al., 1978). The nearest major pollution sources are located along the industrialized Wasatch Front (Utah, Salt Lake, and Tooele counties) and include a copper smelter located 87 miles (140 kilometers) north-northeast of the Lynndyl site and a steel works located about 71 miles (115 kilometers) northeast of the Lynndyl site.

The mountain ranges in Utah effectively form functional air basins with minimal exchange at the boundaries of adjacent air basins except during periods of high dilution conditions (moderate-to-strong winds and/or deep surface mixing layers). Also, because of the general north-south orientation of the mountain ranges, there is very little east-west or west-east transport within the surface mixing layer. For example, during the period when the copper smelter located on the west side of the Salt Lake Valley was closed by a strike, there was no decrease in the SO_2 concentrations measured on the east side of the valley (Hill, 1972).

The current Prevention of Significant Deterioration (PSD) Regulations (Federal Register, Vol. 43, No. 118, p. 26398) define the amount of ambient impact that is significant as:

Table 8.3-4

Estimated Pollutant Concentrations at Deep Creek Mountains Due to Proposed Lyndyl Power Generating Station

	Concentration ($\mu g/m^3$)			
Averaging Time	Sulfur Dioxide	Class I PSD Increment	Particulate Matter	Class I PSD Increments
Annual	0.016	2	0.002	6
24-hour	2.8	5	0.4	10
3-hour	17.3	25		

Source: Bowers, J.F. et al., 1978a.

1) Annual SO_2 and/or particulate concentrations above 1 microgram per cubic meter.

2) Twenty-four-hour SO_2 and/or particulate concentrations above 5 micrograms per cubic meter.

3) Three-hour SO_2 concentrations above 25 micrograms per cubic meter.

Concentration calculations for the IPP power plant located at the Lynndyl site show that, with the exception of short-term SO_2 concentrations, the plant would not have a significant air quality impact (following the definition of a significant impact given above) at distances beyond about 6 to 12 miles (10 to 20 kilometers) from the plant. Because significant short-term SO_2 concentrations are possible beyond 12 miles (20 kilometers), the maximum short-term SO_2 concentrations from the Lynndyl alternative power generating station were calculated for Tooele, the nearest location at which violations of the NAAQS for SO_2 were observed during 1977.

The Tooele SO_2 monitoring site is about 71 miles (115 kilometers) north-northeast of the Lynndyl site. With the exception of mixing depths, the "worst-case" 3-hour and 24-hour periods for Tooele were chosen following the same procedures as for the Deep Creek Mountains potential Class I analyses. Because emissions from the IPP power plant at the Lynndyl site must pass over the Sheep Rock Mountains in order to affect directly the Tooele monitor, the mixing depth was assumed to be at least 2,600 feet (800 meters). The hourly meteorological inputs for the "worst-case" 3-hour and 24-hour periods are given in Appendix VIII.3-5.

The maximum 3-hour and 24-hour average SO_2 concentrations calculated for the Tooele SO_2 monitor as a result of emissions from the plant site are 7.9 and 2.5 micrograms per cubic meter, respectively. As noted above, EPA considers significant 3-hour and 24-hour SO_2 concentration contributions to be 25 and 5 micrograms per cubic meter, respectively. Thus, under "worst-case" meteorological conditions, the plant's calculated air quality impact at Tooele is not significant.

The maximum 3-hour SO_2 concentration observed during 1975 at the Tooele monitor was 2,175 micrograms per cubic meter, or 167 percent of the 3-hour standard, and the maximum observed 24-hour SO_2 concentration was 445 micrograms per cubic meter, or 122 percent of the 24-hour standard. Assuming the copper smelter to be the principle cause of the observed SO_2 concentrations and assuming that the SO_2 concentrations are approximately inversely related to distance from the smelter at downwind distances beyond Tooele, the maximum 3-hour and 24-hour SO_2 concentrations at the Lynndyl site are 360 and 74 micrograms per cubic meter, respectively. If the maximum 3-hour and 24-hour SO_2 concentrations calculated for the IPP power plant are added to these concentrations, the resulting 3-hour and 24-hour SO_2 concentrations are 498 and 124 micrograms per cubic meter, respectively. Thus, the combination of the maximum short-term SO_2 concentrations calculated for the IPP power plant at the Lynndyl site, with the maximum observed SO_2 concentrations at the Tooele monitor, extrapolated to the Lynndyl site leads to short-term SO_2 concentrations that are well below the short-term NAAQS for SO_2. Since the SO_2 maximum concentrations observed at the Tooele monitor and calculated concentrations at Lynndyl site occured under different meteorlogical conditions, a direct comparison cannot be made.

d. Summary

It is doubtful that important interactions of Lynndyl emissions and emissions from stationary pollutant sources located along the Wasatch Front would be likely because the Lynndyl site and the Wasatch Front area are contained in different functional air basins (Bowers, et al., 1978a). Following the EPA definition of a significant air quality impact, the results of model calculations indicate that the plant would not have a significant impact at the nearest representative air quality monitoring sites where violations of the NAAQS have been measured. Also, extrapolation of the maximum observed SO_2 concentrations for the nearest monitoring site at which violations of the NAAQS for SO_2 have been measured indicate that emissions from the plant would not endanger the NAAQS for SO_2. Finally, with the exception of Class I regions, EPA does not intend to apply air quality models at downwind distances greater than 31 miles (50 kilometers) because of the uncertainty in model calculations at long downwind distances (Federal Register, Vol. 43, No. 118, p 26398). The distance from the Lynndyl site to the nearest major stationary pollutant source is more than double this threshold distance.

EPA (Region VIII) is presently reviewing the Lynndyl site proposal under the PSD permit review procedure requirements of the Clean Air Act. The analysis would include an assessment of best available control technology (BACT) and air quality impact. The Utah Air Quality Bureau would also review the Lynndyl proposal for compliance with air quality regulations for issuance of a construction permit. These agency analyses will supplement the modeling results presented in this ES

e. Ozone, Trace Elements, Radioactive Elements and Secondary Pollutants

No studies have specifically addressed impacts on existing levels of ozone or concentrations of trace elements, radioactive elements, and secondary pollutants. Appendix VIII.3-6 lists the trace element concentrations which could be expected at the Lynndyl site. Because of the similarity in coal qualities between the two sites, the Salt Wash discussion applies to the Lynndyl site and no significant impacts are anticipated.

f. Cooling Tower Plume

No new studies have been conducted to determine the effect of the cooling tower plume on the environment. However, based on calculations made for the Salt Wash site, it is possible that, under certain meteorological conditions, the cooling tower plume would impact areas outside of the plant boundaries. This impact would, however, be infrequent and would not be significant.

g. Visibility

The Environmental Protection Agency (EPA) is expected to promulgate visibility regulations sometime after August, 1979. These regulations would provide the appropriate methods for estimating, preventing, and remedying any future or existing impairment of visibility over Class I lands resulting from man-made air pollution.

Considering the beginning state of the art and lack of data, many uncertainties exist in assessing potential visibility impacts. The 1977 Clean Air Act Amendments do not provide any guidance on how to assess visibility impacts and regulations have not yet been promulgated that could be used to assess

impact significance. Therefore, any consideration of visibility impacts must be made without the benefit of specific guidance from EPA.

During a conference on visibility modeling hosted by the BLM Utah State Office on March 15, 1978, representatives of government agencies and private industry suggested that the variability shown by existing visibility measurements be considered in assessing the significance of visibility reductions caused by power plant emissions. The working group also suggested that a significant visibility reduction might be defined as a reduction that equals or exceeds one standard deviation of the mean visibility. For the visibility data from the Delta Airport (Table 8.2-3), the standard deviation of the visibility is about 20 to 50 percent of the mean.

Modeling calculations performed by the H. E. Cramer Company (Bowers, 1978) show that, for emissions from the IPP plant contained in the surface mixing layer at the Lynndyl site and with a crosswind (normal) plume-observer orientation, the maximum meteorological range (distance at which "average" human eye detects an ideal black object against the horizon in daytime) reduction for the Deep Creek Mountains would be between 5 and 10 percent. The same calculation for the nearest existing or potential Class I region in southeastern Utah is less than 5 percent. If the suggested definition of a significant visibility reduction is used, no significant visibility reductions are calculated at any existing or potential Class I region as a result of emissions from the IPP power plant at the Lynndyl site, using the single case studied.

The study did not consider other cases with potential visual range and discoloration impacts such as plumes contained in elevated inversion layers or other optical viewing angles including viewing along the axis of the plume. It may be that one or more of these cases could have a greater impact on visibility than the case studied, but too many uncertainities exist to confidently analyze the cases quantitatively. Bowers (1978) points out that the maximum number of hours of potential visibility impacts at the Deep Creek Mountains attributable to the presence of a plume in an elevated inversion layer is only about 0.6 percent of the daylight hours in a year.

The results of the atmospheric discoloration calculations (Bowers, 1978) using the threshold blue light to red light luminance ratio suggested by Latimer (1978) of 0.9, showed no cases of atmospheric discoloration in the Deep Creek Mountains using the meteorological data available (1949-1954). Atmospheric discolorations have been reported to occur as a result of emissions from some of the coal-fired power plants in the western United States (Latimer, 1978). However, most of these cases appear to have been associated with plumes contained in an elevated inversion layer above the top of the surface mixing layer. On the basis of his calculation and the observations of Latimer (1978) and others, Bowers (1978) concluded that atmospheric discolorations would be unlikely to occur with a crosswind plume--observer orientation at the Deep Creek Mountains during periods when the plumes from the proposed plant is contained within the surface mixing layer. Calculations were not made for the daylight hours with the plume contained in an elevated inversion layer because the uncertainties mentioned previously. However, depending upon meteorological conditions and plume observor positon, a brown haze may be visible in the Sevier-Desert (Bowers, 1979).

The determination of the significance of the impacts to visibility in Class I areas would depend upon the regulations that are to be promulgated by EPA and the position of the Federal Land Manager charged with the direct responsibility for management of the affected Class I area as to the impact on air quality related values (including visibility). It is the present policy

of the National Park Service to protect the scenic values of their Class I areas from any visual impairment of human levels of perception which is adverse (memo from Director, NPS, to Mr. Davis Hawkins, EPA, April 5, 1978).

i. Construction Activities and Increased Population

Construction activities would result in a temporary increase in particulates around the alternative IPP plant site. Fugitive dust or nonpint source particulates would be generated from dirt roads, earth moving, aggregate storage piles, and other surface disturbances (EPA, 1974a). Particulates from these sources are not under state and federal standards and it is difficult to quantify the impact of these short-term emissions.

A long-term increase in SO_2, particulates, and NO_2 from population increase in the plant area could be expected. The resulting concentrations generated by transportation, solid waste disposal, and commercial fuel consumption are expected to be only slightly higher than the current background levels. The particulate and NO_2 concentrations due to these low-level urban emissions have been estimated, for other power projects, to exceed the concentrations resulting from power plant emission (EPA, 1977c).

3. Topography, Geology, Mineral Resources, and Paleontology

a. Regional Setting

Fossil hunting and collection activities could have adverse impacts on paleontological resources within western Utah. Some important and useful fossils, both vertebrate and invertebrate, could be lost to the scientific community. The extent of this impact cannot be quantified.

b. Project Area

Topography would be altered by cut and fill operations on the 3,607 acre proposed plant site, 119 acre proposed railroad right-of-way (see Figure 8.2-B), and 600 acres (1.2 million cu. ft.) of aggregate borrow sites.

Scientifically valuable vertebrate fossils are located within project area (Miller and Webb, 1978) however, the abundance of these fossils was not indicated in the literature search conducted for the project area. The extend of the impact to any of these fossils cannot be quantified.

c. Power Transmission Systems

Construction and maintenance activities associated with the transmission lines could damage or destroy paleontological materials. Figures 8.2-B through 8.2-G show the approximate locations of the important paleontological study areas. The extent of this impact cannot be quantified.

The planned transmission line routes should not interfere with either geothermal or coal energy resource development (Dames and Moore, 1978).

The probability of land use conflicts between commercial mineral extration and construction and operation of power transmission lines is low (Dames and Moore, 1978).

One significant area is the Pioche Mining District, Nevada where intense exploration and some production are currently underway. Because the LYnndyl to Highland Junction route segment west of Pioche, Nevada is contiquous to an existing powerline, it is not anticipated that conflicts with mining would occur.

Normally, nearby power transmission lines and a power source are beneficial to mineral resource development.

Assuming no transmission lines would cross active mining operations, the Bureau of Mines has no objections to the proposed transmission line corridors (Bureau of Mines, 1979).

4. Soils

a. Regional Setting

An increase in off-road vehicle (ORV) travel would disturb vegetation on soils within the regional setting which have a high potential for wind erosion. The rate of wind erosion would increase. Areas most likely to be impacted are dunes and playas which produce little vegetation. Depending on the sites disturbed, revegetation and soil stabilization could require from 10 to 30 years (SCS, 1978).

About 7,250 to 7,760 acres of farm land would be idled through the change in use of water from agricultural to industrial use. No accelerated rates of erosion are expected on idled farm lands.

b. Project Area

Construction activities would disturb soils which are classified as having high susceptibility to wind erosion (SCS, 1978). However, the Brush Beryllium development, about 8 miles southeast of the Lynndyl site, was on the same soils types and construction activities were similar. The beryllium processing plant and ancillary facilities have not caused problems from accelerated erosion (SCS, 1978). None are expected to occur within the Lynndyl project area.

c. Power Transmission Systems

Erosion rates would increase as vegetation that serves to stabilize soils is removed or crushed by construction equipment. The potential for increased erosion would be greatest on the 125 miles of high erosion hazard soils that would be affected by the transmission line systems (see Figure 8.2-B-through 8.2-G).

Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of The Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).

5. WATER RESOURCES

Introduction

The project's average annual, water requirement is 44,700 acre-feet. It is proposed that 33,600 acre-feet of water would be obtained from the flow of the Sevier River. Another 5,600 acre-feet of water would be pumped into the Sevier River from the eight Delta, Melville, Abraham, Deseret Irrigation Company (DMAD) wells. These waters would be made available by purchase of shares in the involved irrigation companies. The remaining water, 5,500 acre-feet, could be obtained through one of two scenarios explained in the Description of Lynndyl Alternative (see Table 8.1-7).

a. Regional Setting

Any hydrologic system operates as a single unit. Changes in points of diversion, kinds of uses, and quantities of water returned to drainages would have repercussions throughout the entire hydrologic system. Impacts would be of four types: 1) change in water use, 2) change in surface flow regimes, 3) change in ground water regimes, and 4) changes in water quality. Impacts have been analyzed based on average water conditions.

(1) Water Use Changes

Waters proposed for use by the project are presently being used for other purposes. Table 8.3-5 shows the estimated changes in water use in each of the seven hydrologic sub-units. Figure 8.3-1 is a flow diagram which depicts the expected changes in surface and ground water movement. It is estimated that, under scenario number 1, 13,900 acre-feet of water now consumed by irrigated croplands and 31,700 acre-feet consumed by evaporation or transpiration from wetlands, water surfaces, and bare ground would be transferred to new uses. (Total changes include 900 acre-feet of water annually for use by new population in the Delta area. A total of 45,600 acre-feet change.) Under scenerio number 2, the changes in uses would be 14,700 acre-feet and 30,900 respectively.

(2) Surface Water Regime Changes

Water levels in Sevier Bridge Reservoir would be altered to meet the year-round requirement for water at the proposed IPP plant and the seasonal demand for irrigation water. IPP would also store water in the reservoir to provide a reliable supply during low water years. The average annual storage is estimated to increase from 100,000 to 145,000 acre-feet. The reservoir surface area would increase from 4,200 acres to about 7,000 surface acres. Seasonal fluctuations in reservoir levels would be slightly reduced and draw down would occur only during a succession of low water supply years. Figure 8.3-2 shows reservoir levels during average water supply years. Increased storage and larger surface area would increase reservoir evaporative losses by approximately 3,500 acre-feet annually.

The altered water release pattern from the reservoir would change the Sevier River's flow pattern. Between the Sevier Bridge Reservoir and Leamington Canyon, river flow would increase in the nonirrigation season by as much as 10 cubic-feet per second (ft^3/s). Peak irrigation season flows would be reduced by 1,000 to 1,130 ft^3/s. Figure 8.3-3 shows expected flows.

Between Leamington Canyon and the DMAD Reservoir, the river would also have higher flows during the nonirrigation season, but would change little during the summer irrigation season. Figure 8.3-4 shows the anticipated flows. Since approximately 21,200 acre-feet per year of water now diverted by the Central Utah Canal would be left in the Sevier River, the river's total flow would increase. An additional 13,900 acre-feet of water per year, pumped into the Sevier River from the eight DMAD wells, would also add to the river's flow.

There would be little change in the timing of the river's flows below DMAD Reservoir, but flow volume would be reduced by about 12,500 acre-feet per year. Consequently, flows into Gunnison Bend Reservoir, as well as irrigation return flows and drainage water accruing to the river would also be reduced.

TABLE 8.3-5

Annual Consumptive Use of Water By Hydrologic Units

Hydrologic Subunit	Consumptive Use--Thousands of Acre-Feet									
	Evapo-transpiration		Reservoir Evaporation		Irrigation		Domestic, Municipal, Industrial Uses		Total	
	Pre-project	With Project	Pre-project	With Project	Pre-Project	With Project	Pre-Project	With Project	Pre-Project	With Project
					SCENARIO ONE					
1. Sevier Bridge-Leamington Canyon	557.3	557.1	35.9	39.4	27.3	22.3	0.7	0.7	621.2	624.5
2. Oak City-Lynndyl-Leamington	70.2	62.3	10.1[a]	5.4[b]	22.3	22.3	0.5	0.5	103.1	90.5
3. North Pavant Valley	185.9	181.2	--	--	14.4	10.7	0.3	0.3	200.6	192.2
4. DMAD	113.9	108.1	3.3	2.8	85.6	75.4	1.1	2.0	203.9	188.3
5. North Lowlands-Cherry Creek	256.5	248.6	--	--	--	--	--	44.7	256.5	293.3
6. Wetland Fringe	270.3	266.8	--	--	--	--	--	--	270.3	266.8
7. South Lowlands-Sevier Lake	191.4	191.4	--	--	--	--		--	191.4	191.4
Totals	1,645.5	1,615.5	49.3	47.6	149.6	135.7	2.6	48.2	1,847.0	1,847.0
					SCENARIO TWO					
1. Sevier Bridge-Leamington City	557.3	557.1	35.9	39.4	27.3	27.3	0.7	0.7	621.2	624.5
2. Oak City-Lynndyl-Leamington	70.2	61.7	10.1[a]	5.4[b]	22.3	18.5	0.5	0.5	103.1	86.1
3. North Pavant Valley	185.9	180.4	--	--	14.4	10.7	0.3	0.3	200.6	191.4
4. DMAD	113.9	107.8	3.3	2.8	85.6	78.4	1.1	2.0	203.9	191.0
5. North Lowland-Cherry Creek	256.5	251.1	--	--	--	--	--	44.7	256.5	295.8
6. Wetland Fringe	270.3	266.8	--	--	--	--	--	--	270.3	266.8
7. South Lowlands-Sevier Lake	191.4	191.4	--	--	--	--	--	--	191.4	191.4
Total	1,645.5	1,616.3	49.3	47.6	149.6	134.9	2.6	48.2	1,847.0	1,847.0

[a] Fool Creek 5.3
DMAD Reservoir 4.8.

[b] Fool Creek 0
DMAD Reservoir 5.4.

LEGEND

10.6 SCENARIO NOS. 1 AND 2
9.8 SCENARIO NO. 2 IF DIFFERENT THAN SCENARIO NO. 1

FIGURES 1,000 ACRE FEET

HYDROLOGIC UNITS AFFECTED BY PROJECT

1. SEVIER BRIDGE-LEAMINGTON CANYON
2. OAK CITY-LYNNDYL-LEAMINGTON
3. NORTH PAVANT VALLEY
4. DMAD
5. NORTH LOWLANDS-CHERRY CREEK
6. WETLAND FRINGE
7. SOUTH LOWLANDS-SEVIER LAKE

BASIN BOUNDARIES

SURFACE WATER

INDICATES CONSUMPTIVE USE IN STREAMS, RESERVOIR OR LAKES

GROUND WATER MOVEMENT AND ESTIMATED QUANTITIES CROSSING PARTICULAR BOUNDARY

DRAINAGE WATER

SEVIER RIVER

RESERVOIR WITH ESTIMATED EVAPORATION LOSS (C.U.)

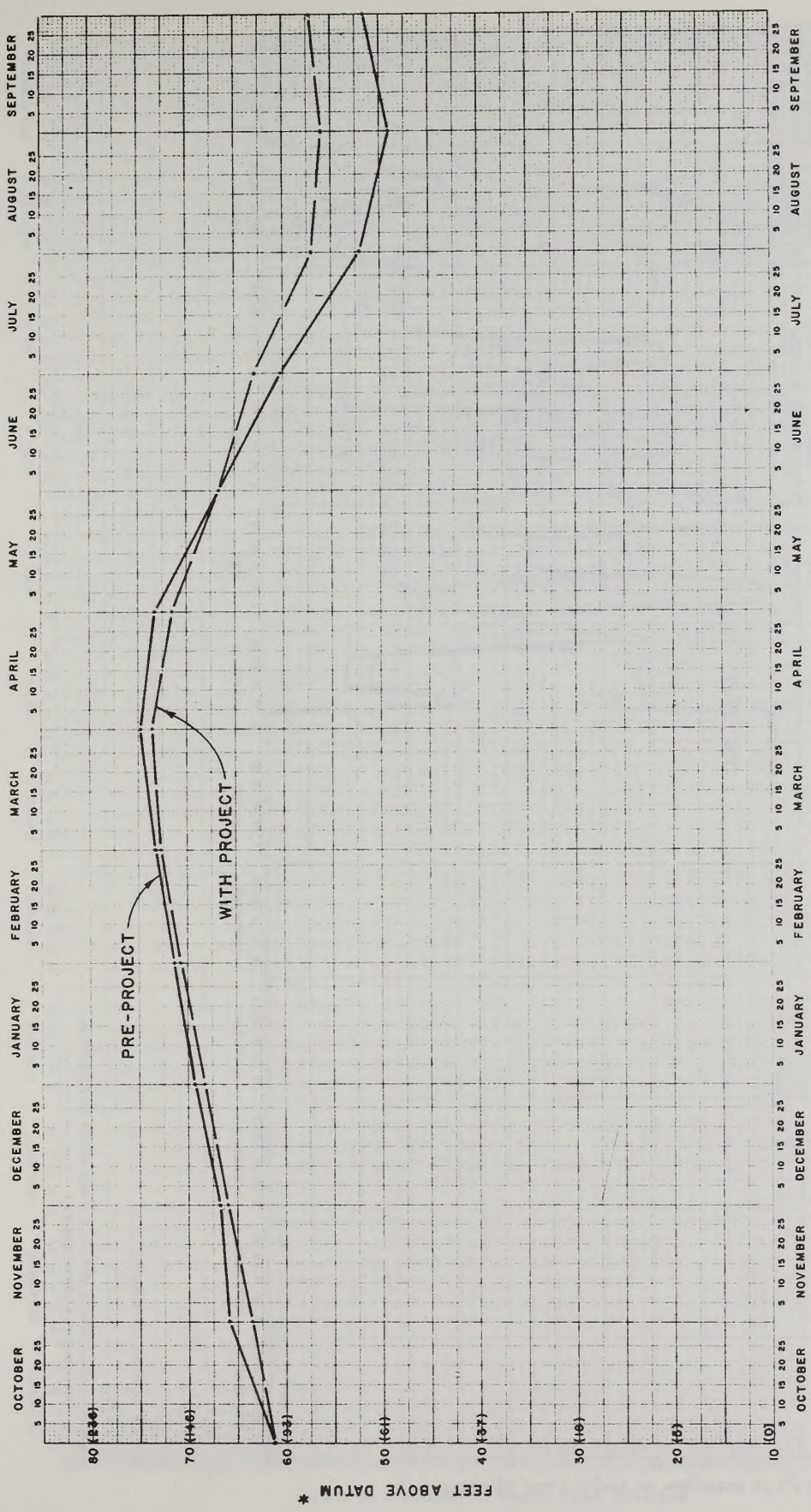
INDICATES WATER LOST BY SEEPAGE AND MOVING TO GROUND WATER

INDICATES QUANTITY OF INSTREAM FLOW AT THIS POINT

DMAD WELLS PUMPED INTC SEVIER RIVER

LOWER SEVIER RIVER BASIN WITH PROJECT

FIGURE 8.3-1

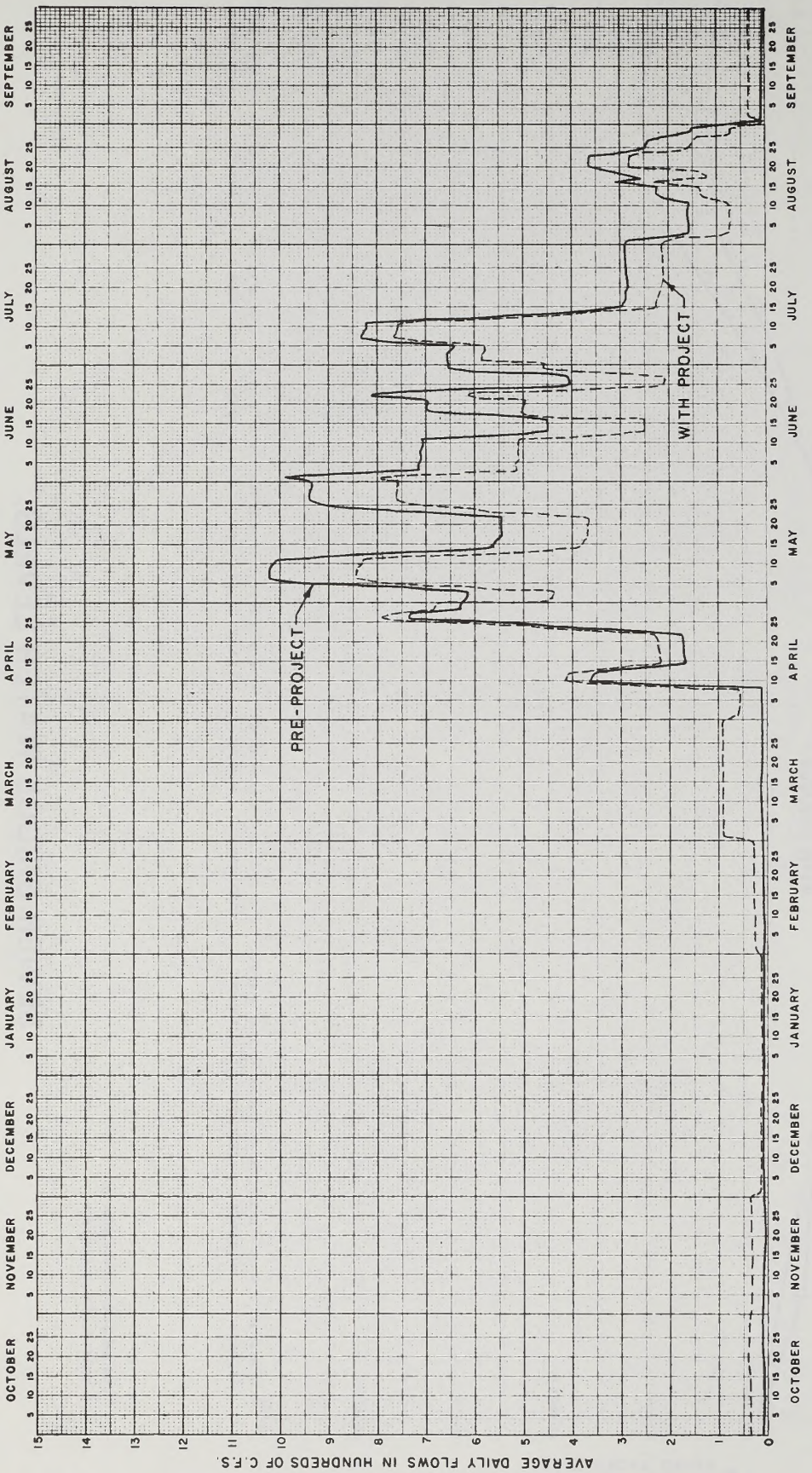


* DATUM ELEVATION = 4937.51
( ) ACRE-FEET IN THOUSANDS

SEVIER BRIDGE WATER LEVELS:

1972 AND PROJECTED WITH IPP

FIGURE 8.3-2



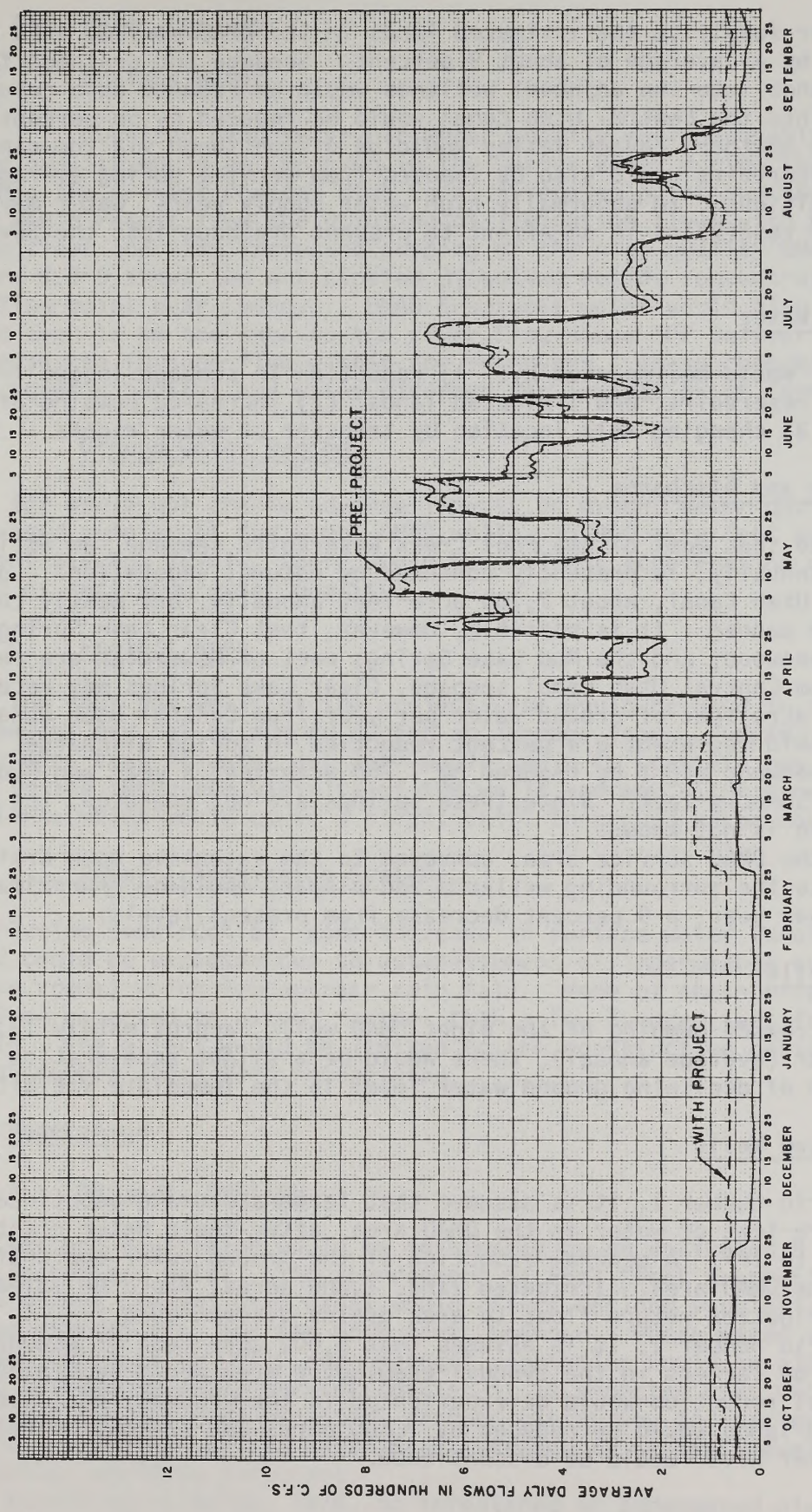
U.S.G.S. GAGE NO. 10219000

SOURCE: ANNUAL REPORT OF SEVIER RIVER WATER DISTRIBUTION, SEVIER RIVER COMMISSIONERS.

SEVIER RIVER FLOWS NEAR JUAB, UTAH:

1972 AND PROJECTED WITH IPP

FIGURE 8.3-3



U.S.G.S. GAGE NO. 10224000

SOURCE: ANNUAL REPORT OF SEVIER RIVER WATER DISTRIBUTION, SEVIER RIVER COMMISSIONERS.

SEVIER RIVER FLOWS NEAR LYNNDYL, UTAH:

1972 AND PROJECTED WITH IPP

FIGURE 8.3-4

Surface water supply to the irrigated lands in the DMAD service area would be reduced by an average of about 9 percent. Seepage and drainage flows from irrigated lands into the adjacent wetlands would be reduced as a result.

Diversions into the Central Utah Canal would be reduced by 56 percent and all deliveries to northern Pavant Valley would be discontinued via the canal. The Fool Creek Reservoirs would also be removed from service during average water supply conditions. In abnormally high water supply years, water may be diverted to these reservoirs in an effort to prevent drainage into the Sevier Lake.

(3) Ground Water

Ground water would be impacted by: 1) reduction in seepage losses from affected canals, reservoirs, and irrigated lands; (2) increased pumping of the DMAD wells; and (3) changing well location by transfer of water rights.

Seepage and Discharge

It is assumed that most of the Fool Creek Reservoirs seepage, an estimated 3,500 acre-feet annually, is presently consumed by natural vegetation. Losses from the Central Utah Canal, about 7,700 acre-feet annually, are mostly consumed in the same manner. It is possible, however, that Clear Lake Springs, seeps west of Greenwood, and the Mud Lake Springs west of McCornick are receiving some flow from Central Utah Canal seepage, Clear Lake Springs may receive an estimated 650 acre-feet of ground water per year from Central Utah Canal seepage. This could represent a 4 percent reduction in spring discharge. Seeps west of Greenwood might be reduced by 1,700 acre-feet a year and Mud Lake Springs by 750 acre-feet. Since these springs are not measured, the relative reduction is not known.

Seepage in the DMAD service area, conveyed to the extensive open drain system and then to the surrounding wetlands and playas, would be approximately 2,100 acre-feet per year, a 9 percent decrease from present levels.

DMAD Wells

Assuming increased pumping of the eight DMAD wells, approximately 13,900 acre-feet per year (average annual), there would be a slight acceleration of the present trend of declining ground water level in the immediate vicinity.

Purchased Wells

Under scenario number 1, it is assumed that farmers would discontinue pumping 5,500 acre-feet of water in the DMAD area after their water rights were transferred to IPP. A general reduction of the ground water overdraft would occur in the DMAD area. Irrigated land, 1,800 acres, would be idled and the resulting irrigation return flows to area drains discontinued.

Under scenario number 2, it is assumed that 5,500 acre-feet of ground water now pumped by farmers in the Lynndyl-Leamington area would be discontinued. A general reduction would be experienced in the present local overdraft. Irrigated lands would be reduced by 1,600 acres and irrigation return flows to the Sevier River would be discontinued.

(4) Water Quality

Surface Water

Gunnison Bend Reservoir water quality would probably remain unchanged. Water quality would be improved in the Sevier River during the winter months between the present Central Utah Canal diversion point and the DMAD Reservoir. This would result from the diluting of irrigation flows with higher quality river flows and from increased pumping of the high quality DMAD well water. Figure 8.3-5 shows the anticipated dissolved solids concentrations at the sampling point near Lynndyl. DMAD Reservoir water would also improve and would tend to be the same as the river flow since IPP deliveries would increase the through-flow within the reservoir. These changes could improve both aquatic habitat and water diverted for irrigation of farmlands and pasture.

Ground Water Regime

IPP would not create adverse impacts on ground water quality. Assuming increased pumping of the eight DMAD wells, 13,900 acre-feet each year above present average levels, there would be a slight acceleration of the present trend of declining water quality.

b. Project Area

The four new wells at the project site would be used in a reserve capacity and may or may not be pumped during an average year. Pumping a maximum of 5,500 acre-feet of water per year would begin to create a new cone of depression in the immediate vicinity of the wells and may alter ground water hydraulic gradients which would cause a slight shift in ground water movement.

c. Power Transmission Systems

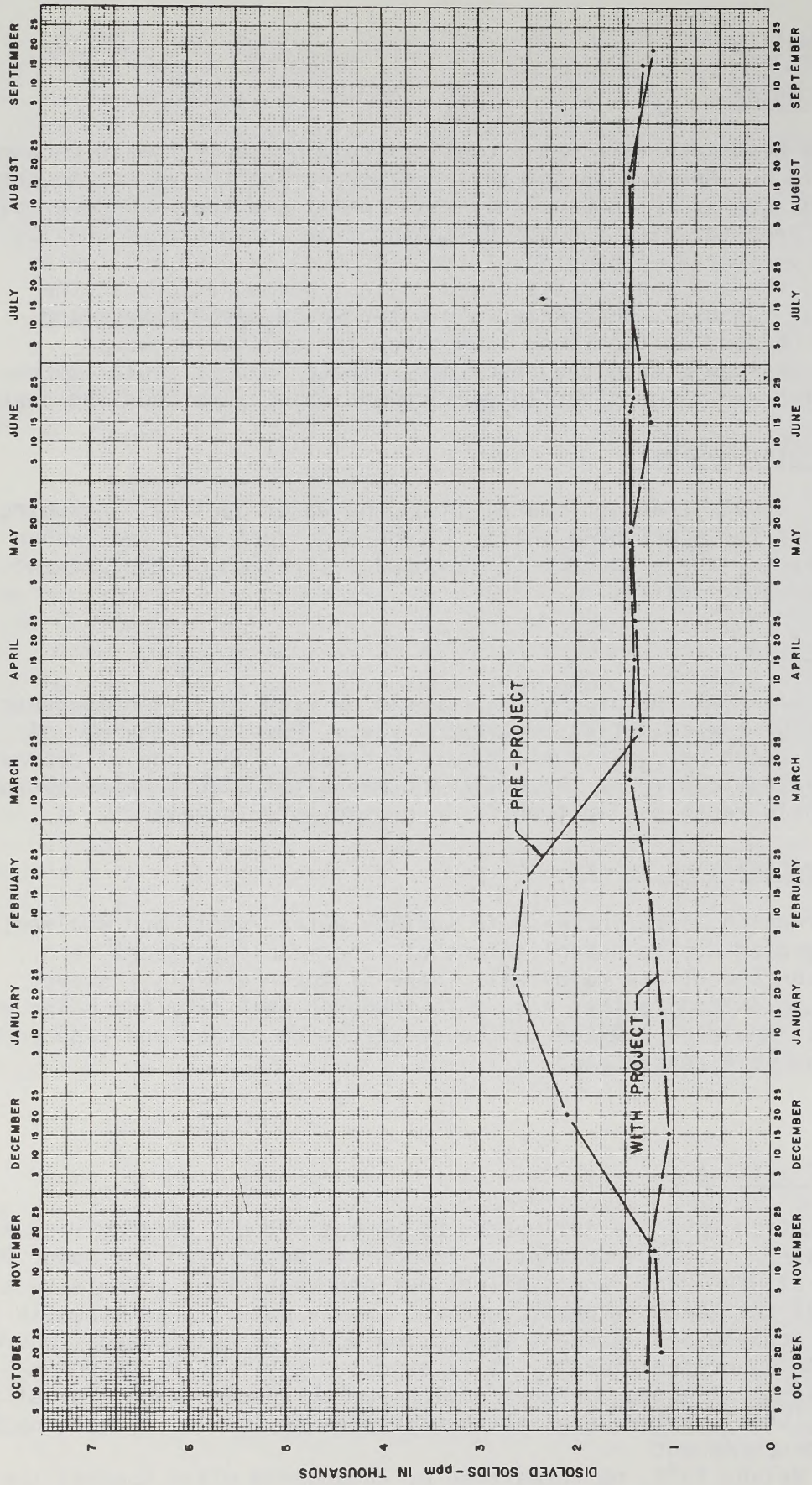
During construction, some increase in surface water runoff and sediment yield could be expected due to establishment of impermeable surfaces (e.g., access roads) which concentrate rain fall. None of these effects, however, would be expected to extend farther than a few hundred feet from the point of origin. The effect would be limited to the construction period and reduced as the disturbed areas were revegetated.

6. Vegetation

a. Regional Setting

Wetland vegetation would be influenced by an estimated 9 percent reduction in surface water. The abandonment of Fool Creek Reservoirs and about 50 miles of the Central Utah Canal would affect wetland vegetation. The extent of the effects are, for the most part, unknown. Where water is permanently removed, however, aquatic and emergent vegetation would be eliminated. Where water is reduced below present levels, it is expected that water-dependent plant species would be affected, perhaps giving way to species more typical of dry environments. Unless water were returned to present levels, effects upon vegetation would be permanent.

According to Welsh, 1978, no threatened or endangered plant species are associated with wetland (alkali sink, aquatic or marsh) vegetation in this area.



SOURCE: USGS, WATER RESOURCES DATA FOR UTAH, 1972.

SEVIER RIVER DISSOLVED SOLIDS CONCENTRATIONS

NEAR LYNNDYL, UTAH

FIGURE 8.3-5

b. Project Area

Vegetation on approximately 367 surface acres would be temporarily disturbed during construction and 2,239 acres would be occupied for the life of the project. No plant species listed or proposed as endangered or threatened were found within the project area and none were cited in literature reviewed (Welch, 1978).

c. Power Transmission Systems

A total of approximately 2,803 acres would be disturbed during the construction of the Lynndyl portion of the transmission systems. One hundred and fourteen acres would remain occupied.

7. ANIMAL LIFE

a. Regional Setting

(1) Terrestrial Wildlife

It is estimated that surface water diversion would reduce return irrigation water flow to Topaz Slough and incidental wetlands by 9 percent. Reduction in flow would reduce the amount of wetland habitat and, consequently, the production of resident waterfowl and marsh associated birds. Migratory waterfowl, using these areas for resting and feeding, would also be affected. Because amount of habitat reduction cannot be predicted with available information, population reductions cannot be accurately assessed.

Abandonment of the Fool Creek Reservoirs would displace migratory waterfowl and marsh associated birds during the spring period. About 2,000 migrant waterfowl and an unknown number of marsh associated birds, would be displaced except during extremely wet cycles when the Sevier River would be diverted into the reservoirs.

Retirement of 7,250 to 7,760 acres of irrigated farm land in eastern Millard County could reduce the amount of food and protective cover available to ring neck pheasants. Approximately 8 percent of pheasants in Millard County and their annual production of young pheasants could be lost if abandoned farm lands were fully grazed by domestic livestock or vegetative cover removed by other means. If native vegetation were allowed to re-invade these farm lands and cover not fully harvested, impacts to ring-necked pheasants would be reduced.

People attracted to Millard-Juab Counties, Utah by the project would increase the numbers of sportsmen hunting wildlife. It is estimated, for example, that 4,310 additional people would be living in the Delta-Lynndyl area during 1987, if the power plant were under construction. Adjacent towns would also contribute new hunters to central Utah.

While the State of Utah limits the harvest of anterless deer and elk, an unlimited number of hunting permits are available for cougar, bear, bull elk and buck deer. More hunting could reduce big game populations in central Utah. According to Shields (1976) most deer herds in Utah are hunted to capacity. Additional hunters could eventually reduce deer populations below their present levels. The decline in affected deer populations cannot be quantified as current numbers are unknown.

The increase in upland game harvested each year cannot be determined, however, the effects on bird populations are expected to be low.

More intensive waterfowl hunting pressure would occur at Clear Lake Waterfowl Management Area, lower Sevier River, DMAD Reservoir, small sinks south and west of Delta, Utah including Swan, Crafts Lake, Topaz Slough, and the Fish Spring National Wildlife Refuge. The influence of increased regional hunting on migratory waterfowl cannot be predicted, but resident waterfowl populations could decline.

Additional people in the region could also result in increased harassment and poaching of all species of wildlife, including the endangered peregrine falcon and bald eagle. Such incidental losses are not expected to adversely modify the critical habitat of these species. The impacts on the population of bald eagles would not be severe enough to jeopardize their continued existence. Only five peregrine falcon eyries are known to exist in Utah (Gill, 1979) thus loss of even one peregrine falcon might consitute jeopardy to the Utah population.

(2) Aquatic Wildlife

During the peak period of power plant construction in 1987, it is estimated that an additional 56,000 fish could be needed for recreationists to experience the 1973 quality of fishing in Central Utah (Hudson and Thayn, 1977 and Bangerter, 1973). During the operational period of the power project, an additional 22,000 fish could be needed to provide the same quality of fishing. These additional fish requirements constitute less than 1 percent of the annual fish yield for Utah fish hatcheries (UDWR, 1979).

It is the policy of the Utah Division of Wildlife Resources to attempt to stock fish in adaptable waters to meet the demand for sport fishing. Fish hatcheries within the State of Utah are currently producing fish at their full capacity (DWR, 1979). Therefore, fish planting priorities must be changed if new demands on specific fishing water develops.

Increased fishing pressures would be applied mainly to Oak and Corn Creeks, Minersville Reservoir, small streams, and lakes on the Tushar Mountains within Central Utah. Rainbow, brook, lake, and cutthroat trout numbers would decline without supplemental plants from fish hatcheries. In addition, the average age and size of fish in these waters would decrease through increased harvest.

b. Project Area

(1) Terrestrial Wildlife

About 2,170 acres of non-critical wildlife habitat would be occupied at the plant site. This could affect small mammals, reptiles, and amphibians.

Removal of 1.2 million tons of borrow materials from 200 acres for construction would temporarily denude the borrow areas of vegetation. Revegetation could take up to five years. Maximum forage lost until vegetation is fully re-established could equal amounts needed to feed 15 deer for one month each year. About 48 percent of area within the plant site, railroad and water pipeline right-of-way would be occupied, while temporary disturbance would occur on 200 acres within borrow areas.

No threatened or endangered animals are known to occupy the plant site or ancillary facilities although peregrine falcons and bald eagles may be found in the general area. No losses to individuals or habitat of either species is expected.

c. Power Transmission Systems

Approximately 2,803 acres of wildlife habitat would be disturbed during power line construction and 114 acres would be permanently occupied by power transmission tower pads and roads.

If bald eagles were displaced from traditional winter roosts in Parowan and Cedar Valleys by construction activities, it could be considered as harrassment and could have adverse affects on the displaced birds (Joseph, 1979 and Olendorf, 1979).

New access roads would encourage more travel by recreationists and others into more remote areas. This increased travel would place additional hunting, poaching, or harassment pressures on wildlife, especially upon mule deer, pronghorn antelope, raptors, and desert tortoise.

It is known (Ellis, et al., 1969) that raptors are often shot when perched on power poles or towers. Raptor losses due to indiscriminate shooting would increase.

(1) California Transmission System

The transmission system routes would cross about 70 miles of critical deer winter range in Utah and Nevada (Figures 8.2-B and C). Only 2 miles in the Limestone Hills, Nevada (Mileposts 126-128) are critical deer winter range.

Transmission lines would cross 8 miles of deer fawning area on Big Mountain near Enterprise, Utah (Milepost 159-167; Figure 8.2-C). If this area were disturbed by construction activities during the spring fawning season, some losses would be expected. The number of fawns lost cannot be accurately determined, but the area is a major fawning ground for the Terry-Ox Valley Deer Herd.

Known raptor nesting areas occur along the power transmission routes in the House Range, Confusion Range, Barn Hills, and Limestone Hills. Isolated ferruginous hawk nesting sites could be located in pinyon-juniper foothills along the route. If construction continued during the nesting season, nest abandonment and decrease in hawk production would likely result.

Although the proposed transmission line does not pass through concentration areas for the desert tortoise, some burrows or dens could be destroyed by construction activities.

(2) Wild Horses and Burros

Construction of transmission lines could temporarily displace 55 wild horses along the Lynndyl to Toquop Junction segment (milepost 70-105) in western Millard County, Utah.

Near New Castle, Utah, 14 wild horses range along Route 2 (mileposts 135-150) and 6 head are located near Pioche, Nevada along Route 1 (mileposts 165-185) and 115 wild horses are within the Fortification Herd Line 1 (milepost 110-160).

A total of about 190 wild horses would be disturbed for a few weeks during transmission line construction, but there would be no impact to wild horses.

There are no burros within the above described ranges in western Utah and eastern Nevada.

(2) Utah Transmission System

The transmission lines would cross 148 miles of deer winter range in Utah, 43 miles of which are identified as critical winter range (see Figure 8.2-C through G). This critical winter range is located on the western slopes of Monroe Mountain and along the eastern slopes of the Tushar Mountains (milepost 13 to 56). If transmission line construction proceeded through these critical winter ranges between November and April, winter weakened deer would be placed under additional stress and losses could be expected.

Transmission lines would cross sagegrouse strutting grounds in Dog Valley (Garfield County), another Dog Valley (Juab County), and within Spring and Lake Valleys in eastern Nevada. If construction were undertaken during the mating season (March-April), it could eliminate sagegrouse reproduction for the year and possibly eliminate future mating activities on the strutting grounds.

Transmission lines structures, if constructed in sage grouse concentration areas would provide perches for raptors and make sagegrouse more susceptable to predation. The number of birds lost or the effects upon populations cannot be accurately assessed.

Transmission lines would also traverse habitat of the endangered Utah prairie dog in Parowan and Cedar Valleys of southwestern Utah. Two known colonies are in the vicinity of powerline routes. Even with federal requirement (see Chapter 1), some prairie dogs and their burrows could be inadvertantly destroyed by construction activites. The losses would not jeopardize the continued existance of the species.

(3) Wild Horses and Burros

Transmission line construction could lead to temporary displacement of about 71 wild horses along the Lynndyl-Gonder route in western Millard County Utah.

The effects of transmission line construction on wild horses would be temporary. These animals could be forced out of habitual grazing or trailing areas for a few days or weeks. Because these animals are adaptable to temporary disturbances, it is not expected that the construction or operation of IPP transmission lines would result in the loss of any wild horses.

Only a minute portion of the total forage available to wild horses along the routes would be altered. The introduction of new access roads in wild horse range could lead to additional harassment and loss of animals. Because of the low density of wild horses in the affected areas, this would not be a serious problem.

8. CULTURAL RESOURCES

a. Regional Setting

Vandalism to the cultural values known to exist in the region would result from the increased numbers of people associated with the proposed project. Several hundred sites while 39 sites are listed in, or eligible for, the National Register of Historic places are located in the region and could also be affected by vandalism. Such activity is impossible to quantify but would result in a loss of scientific and educational values.

(b) Project Area

No archaeological sites were located within the project area during the sample survey (Fowler, et al., 1978).

(c) Power Transmission Systems

Construction and maintenance activities associated with the transmission lines could inadvertantly damage or destroy archaeological sites. One hundred and twenty-two sites, 25 of which meet National Register eligibility criteria, are known to occur along the proposed route. Figures 8.2-B through 8.2-G show the approximate locations of these sites.

The introduction of visual elements out of character with the following sites would detract from their historic setting:

Old Irontown, Iron County, Utah
Mountain Meadows Historic Site, Washington County, Utah
Bristol Wells Town site, Lincoln County, Nevada.

These sites are currently (April 1979) listed on the national Register of Historic Places.

Wherever possible and feasible, cultural resources would be avoided by construction and related activities. If this is not possible, the BLM would consult with the appropriate State Historic Preservation Officer to determine the most satisfactory means of mitigating damage. Even with present salvage techniques, some scientific and educational information could be lost.

9. Recreation and Aesthetics

a. Regional Setting

(1) Recreation

The regional setting's recreation attractions would receive increased use by additional population in the area. Existing facilities at Gunnison Bend, Minersville, and Sevier Bridge (Yuba State Recreation Area) reservoirs would be overburdened. Because water levels at Sevier Bridge Reservoir would remain more uniform during the summer months, water sports would be available for longer periods. If boating and sanitation facilities were not expanded Gunnison Bend Reservoir (by Millard County), Minersville Reservoir, and Sevier Bridge Reservoir (by BLM or the State of Utah) to meet the anticipated increase in use, undeveloped areas at all three reservoirs would have sanitation and garbage problems and the quality of the recreation experience would be reduced.

Recreation areas near the Delta-Lynndyl population center would receive more week-day and year-round use than at present. The appeal of recreation attractions within the Sevier Desert would be reduced for some visitors, particulary at the Little Sahara Recreation Area.

Developed recreation sites (camping and picnicking) are insufficient to serve the new population. Additional recreational pressures would most often occur at sites presently being used at greater than 20 percent of their design capacity, increasing use to 40 percent or more at many of the sites, which would result in overcrowding and deterioration of the environment and facilities. Overcrowding and deterioration would be intensified at sites presently being used at greater than 40 percent capacity.

Table 8.3-6 lists the anticipated increases in demand for hunting and fishing which would result from the IPP related population.

Pheasant hunting opportunities would be lost on retired agricultural lands and waterfowl hunting opportunities would be lost at ephemeral wetlands surrounding Delta. Additional competition for available fish and game would most likely lead to less hunter and fisherman success and a resulting dissatisfaction with the recreation experience.

Other dispersed recreational activities would also increase. Off-road vehicle use is expected to increase considerably in the regional setting, resulting in expanded management problems.

Existing city park acreage would be sufficient to serve the new population. Additional municipal recreation facilities (including a swimming pool, softball field, track, and tennis court) would be needed in the Delta area (Architects/Planners Alliance, 1978).

(2) Aesthetics

Plant emissions would produce a visually unpleasing brown haze at certain times within the Sevier Desert. The plant's stacks, buildings, and emissions would dominate (high contrast; see Appendix II-14 for a definition of "contrast ratings") the landscape as viewed from U.S. Highway 50. The plant would be visible (low to high contrast) from other surrounding highways, communities, and recreation attraction areas as far as 40 miles distant. It would be considered a landmark of interest to some and an aesthetically degrading intrusion to others.

Dust columns during construction period from borrow areas C and D would be visible (high contrast) and would be an aesthetically degrading intrusion to some travelers on U.S. 50 and to some visitors at Little Sahara.

b. Power Transmission Systems

(1) Recreation

The presence of transmission lines may cause a reduction in the aesthetic quality of the recreation experience for some people visiting the 18 recreation attractions adjacent to the proposed transmission systems. Maintenance roads would provide improved access for hunters.

(2) Aesthetics

The transmission lines would cause visually adverse man-made contrast in or near visually sensitive areas such as major travel routes, primary highway crossings, high quality scenic areas, communities, or in areas with recreational values. Where proposed transmission lines would parallel existing lines, additional contrast would generally not add appreciably to present contrast.

The Lynndyl portion of the California Transmission System would cross 11 highways in areas of low quality scenery. Table 8.3-7 shows the number of travelers that would view the transmission lines daily and the anticipated contrast rating at each crossing. Near the plant site, both California routes would parallel Highway 272 (milepost 0-10, Figures 8.2-B and C) and would be visible to travelers in 200 vehicles daily. The Lynndyl to Toquop Junction line would parallel Utah Highway 18 (U-18) (milepost 161-164 Figure 8.2-B) and would be visible (medium contrast) to travelers in 455 vehicles daily as well

TABLE 8.3-6

Potential Hunter and Fisherman Impacts

Project Year	Projected IPP Population	Projected Increase in Numbers				
		Deer Hunters	Elk Hunters	Upland Game Hunters	Fishermen	Increased Demand For Fish
1982	420	74	7	38	189	4,100
1987	5,810	1,017	97	494	2,612	56,700
1990	2,250	394	38	191	1,012	22,000

Source: Hudson and Thayn, 1977.

Assumptions made are:

1. The new population's recreation attitudes would follow those of the State of Utah.
2. All of the population would be new to the area.
3. The recreational pursuit would occur within the regional setting.

TABLE 8.3-7

Average Daily Travel and Anticipated Contrast
at Southern California
Transmission Line Highway Crossings

Route Segment	Primary Highway	ADT[a]	Anticipated Contrast	Secondary Highway	ADT[a]	Anticipated Contrast
Lynndyl to Highland Junction	US-6 &50	325	High	272	150	High
	US-93	460	Med.	UT-21	85	High
Lynndyl to Toquop Junction	US-6	850	High	UT-125	210	High
				UT-50	620	High
				UT-257	140	High
				UT-21	120	High
				UT-56	650	Med.
				UT-18	355	Med.
				377	170	High

[a]Source: 1. 1977 Annual Traffic Report, Nevada Highways, Nevada Department of Highways, 1978.
2. Traffic on Utah Highways, Utah Department of Transportation, 1977.

as from the town of Enterprise, Utah. It would be routed through the scenic, sensitive Mountain Meadow area (milepost 162-179 Figure 8.2-B) and would degrade aesthetic values (high contrast). The Lynndyl to Highland Junction line would cross Utah's West Desert, an undeveloped area having open space value (milepost 55-130, Figure 8.2-C). The Lynndyl to Toquop Junction line would cross through Utah's Black Rock and Escalante Desert, undeveloped areas having open space values (milepost 25-80). The California transmission system would be visible from 11 adjacent recreation attractions or areas of high scenic quality. Contrast would be low as viewed from 10 areas except the Pine Valley Mountains (milepost 162-179, Figure 8.2-B), Coyote Hills, Fossil Mountain and the marked segment of the Dominguez-Escalante Trail, where contrast would be high.

The California System would be visible from portions of two areas with potential for wilderness designation:

Area	Anticipated Contrast
King Top (WSA UT-050070)	High
Fortification Range (WSA NV-040-177)	Low

The Utah System would parallel existing lines and would be less likely to add significant visual impact. The Utah Transmission System would cross 11 highways in areas of low quality scenery. Table 8.3-8 shows numbers of travelers that would view the transmission lines daily, and the anticipated contrast rating at each crossing. Near the plant site, both Utah lines would parallel Highway 272 (milepost 0-10 Figures 8.2-D, E, and F), visible to travelers in 200 vehicles daily. The Lynndyl to Gonder line would be routed through two scenic, sensitive areas, Marjum Canyon (milepost 25-35 Figure 8.2-E, and the Wheeler Peak foothills (milepost 45-50). The Sigurd to Paragonah line would be routed through one scenic, sensitive area (the Tushar Mountain foothills milepost 100-110, Figure 8.2-F). In all areas aesthetic values would be somewhat reduced (medium contrast) although the areas have already been disturbed. The Utah Transmission System would be visible from 8 adjacent recreation attractions or areas of high quality (Class A) scenery. Additional contrast would be low as viewed from all areas except Weaver Creek Scenic Area (milepost 104-105, Figure 8.2-E) where the additional contrast would be medium. The Utah Transmission System would be visible from portions of seven areas with potential for wilderness designation as follows:

Area	Anticipated Contrast
Mt. Moriah (RARE II 4-332)	Low
Wheeler Peak (RARE II 4-359)	Low
Howell Peak (WSA UT-050-007)	Medium
Notch Peak (WSA UT-050-078)	Low
Roadless Unit NV-040-100	Medium
Swamp Cedar (ISA NV-040-089)	Medium
Pygmy Sage (ISA NV-040-099)	Low

TABLE 8.3-8

Average Daily Travel and Anticipated Increment of Contrast at Utah Transmission Line Highway Crossing

Route Segment	Primary Highway	ADT	Anticipated Contrast	Secondary Highway	ADT	Anticipated Contrast
Lynndyl to Gonder Substation	US-6	395	low	272	150	high
	& 50	385	low			
Sigurd to Paro-gonah Substation	US-89	5,750	low	Ut-35	450	low
		1,540	low	UT-153	140	low
	US-119	1,190	low	UT-20	320	low
	US-91	4,600	low			
Paragonah Substation-St. George				UT-130	250	high
				380	290	high
				UT-56	650	low

Source: 1. 1977 Annual Traffic Report, Nevada Highways, Nevada Department of Highways, 1977.

2. Traffic On Utah Highways, Utah Department of Transportation, 1977.

c. Microwave Communication System

Aesthetics

The addition of a building and tower at the Big Mountain Microwave Communication Station would make the site more obvious to residents of Enterprise and to travelers on Highway U-18.

10. Land Uses

Project Area

The proposed sale of 4,640 acres of public land for the plant site would reduce federal ownership in Millard County by about 0.14 percent. For the duration of the project, the only environmental impact tied directly to sale of the land (as opposed to granting a right-of-way) would relate to the increase in the local property tax base. According to the applicant, the principle reason for requesting purchase is to obtain financial security for borrowing funds to construct the project (personal cmmunication, Campbell, 1978).

With a sale, the federal government would relinquish control of land uses which could occur in the long-term should the plant be abandoned or removed; however local county zoning would apply.

With respect to the sale criteria stated in FLPMA, the proposed 4,640 acre sale tract is:

1. Not difficult or uneconomic to manage, and is not suitable for management by another federal agency, or

2. Not (previously) acquired for a specific purpose, or

3. Of potential value for serving important public objectives, including but not limited to expansion of communities and economic development. The environmental impact analysis in this statement does not determine whether or not such objectives can better be served on other than public land or by maintaining the plant site in federal ownership.

Regional Setting

The IPP caused population would likely acquire property within the 10 incorporated communities in Millard and Juab counties. There is sufficient private land available within those municipalities for the expected residential and commercial expansion without causing changes in established land uses.

Changes in land use would, however, be caused by the transfer of an annual maximum of 44,700 acre-feet of irrigation water from agricultural use to industrial use. Under the two scenarios developed for obtaining 5,500 acre-feet of ground water (see Water Resources), 7,250 to 7,760 acres of agricultural land could be removed from production as shown on Table 8.3-9. The resultant loss of annual crop production is shown on Table 8.3-10 and would probably extend beyond the lifetime of the project. As compared to 1977 Utah harvest figures, the annual loss in crop production would be equivalent

TABLE 8.3-9

Agriculture Land Removed From Production

Company	Reduction (Acres) Scenario 1[a]	Scenario 2[b]
DMAD Service Area		
Delta	2,240	1,540
Melville	1,060	730
Abraham	2,000	1,370
Deseret	940	640
Subtotal	6,240	4,280
Central Utah Canal Service Area		
Lynndyl-Leamington	--	1,450
McCornick-Greenwood	1,190	1,190
Pahvant-North Flowell	330	330
Total	1,520	2,970

[a]Assuming an average water supply year, normal cropping patterns, and the loss of 5,500 acre-feet of ground water, currently used for irrigation, within the DMAD service area.

[b]Assumes an average water supply year, normal cropping patterns, and the loss of 5,500 acre-feet of ground water, currently used for irrigation, within the Central Utah Canal service area.

TABLE 8.3-10

Loss of Crop Production

		Crop Yield Loss Per Year					
		Scenario 1[a]			Scenario 2[b]		
Crop	Unit	DMAD	Central Utah Canal	Total	DMAD	Central Utah Canal	Total
Alfalfa	Ton	8,000	3,820	11,820	5,490	7,820	13,310
Alfalfa Seed	Lbs.	979,200	--	979,200	672,000	--	672,000
Grain	Bu.	68,940	32,720	101,660	47,340	63,750	111,090
Corn	Ton	11,540	990	12,530	7,920	2,590	10,510
Potatoes	Lbs.	--	2,460,000	2,460,000	--	2,460,000	2,460,000

[a]Assuming an average water supply year, normal cropping patterns, and the loss of 5,500 acre-feet of ground water, currently used for irrigation, within the DMAD service area.

[b]Assumes an average water supply year, normal cropping patterns, and the loss of 5,500 acre-feet of ground water, currently used for irrigation, within the Central Utah Canal service area.

of up to 1 percent of the state's alfalfa production, 51 percent of the state's alfalfa seed, 3 percent of the state's grains, and 2 percent of the corn and potato production in Utah (Utah Department of Agriculture, 1978).

Three USFS RARE II FES areas, five BLM wilderness study units, and uninventoried BLM roadless units (as listed on Table 8.2-15 and shown on Figure 8.2-19) may receive additional ORV and other visitor use, resulting in degradation of wilderness values.

Power Transmission Systems

Where the California Transmission System would be routed within WSA UT-050-070, King Top, (1/2 mile within area for four miles), wilderness character (i.e. naturalness) and wilderness suitability would be impaired adjacent to the line. Where the Utah Transmission System would be routed within uninventoried BLM roadless unit NV-040-100, (200 feet within unit for 3 miles) any wilderness character would be impaired adjacent to the line.

Any impairment of wilderness suitability cannot be allowed prior to completion of BLM's wilderness review and congressional decision on areas having wilderness character. Wilderness suitability could not be affected in any areas having potential for wilderness designation identified along the transmission system.

11. Land Use Plans and Controls

a. Coordination With Existing Land Use Plans

Planning for federal land use has been done by both the Forest Service and the Bureau of Land Management for lands which would be affected by the generating facilities and the transmission lines. This planning has been done over about a 20-year period and is continuing; therefore, the numerous planning units involved have plans in varied status. Some plans are newly revised and include consideration of the IPP proposal; however, the majority of plans were prepared prior to the proposal and did not consider it. Both Forest Service and BLM planning systems allow for consideration of new proposals.

The proposed plant site and transmission corridors were compared with the existing planning documents and all significant conflicts have been covered in appropriate sections of this statement. Power transmission line conflicts are highlighted in Table 3-9.

Alternatives are presented in this environmental statement which would avoid conflicts for some planning units; however, other plan would require revision in order for the conflicts to be resolved. Any revisions would be made following agency regulations, procedures, and policies. For BLM (inasmuch as new planning regulations have not been finalized) a policy would be followed which would utilize the environmental statement process as a mechanism for considering planning recommendations and trade-offs. An approval of the proposal and/or alternatives analyzed in the environmental statement shall also be a decision to amend the plan (or plans if more than one is involved).

b. Regional Setting

The Master Plan of Land Use for Millard County is silent on the matter of industrial growth outside of existing cities. Millard County has expressed a desire to prevent uncontrolled "boom town" growth in the Delta -Lynndyl area (Church, 1978).

According to the Millard County Planning Director, current effects (Spring, 1979) in updating the County Master Plan are being directed toward inventories and identification of goals and objectives by several citizen committees. If the Master Plan updating is not finished or enforced, uncontrolled or boom town growth would occur.

c. Project Area

The power generating station and support facilities are not compatible with Millard County's Zoning Ordinance Number 78. The area's current designation is Open Range and Forest (RF-1), and a zoning variance would be required for plant construction.

d. Power Transmission Systems

The transmission routes conflict with various land use plans which are cited below.

Cedar City District, Utah (BLM)

Buckskin-Mud Spring Management Framework Plan
Proposed transmission route does not follow established utility corridors along its full length within this planning unit.

Pinyon Planning Unit
Proposed transmission route does not follow established utility corridor in southern Escalante Desert northeast of Enterprise, Utah.

Richfield District Utah (BLM)

Sevier Desert Management Framework Plan
Fish and Wildlfe Habitat Enhancement:
Does not allow any surface disturbance within 2 miles of the Sevier River or DMAD Reservoir.

Also retain all public lands adjacent to Fool Creek Reservoir (Millard County, Utah) as wildlife habitat. Other resource uses should be considered and coordinated with the wildlife plan.

House Range (Topaz) Management Framework Plan
BLM proposes to locate "North Sevier Overlook" adjacent to U.S. Highway 50-6 and west of Sevier Lake. This site is near proposed IPP route Lynndyl-Highland Junction, Route 1 (milepost 51).

Eliminate or prevent developments not compatible with open space values. These projects would include such things as powerlines, fences, buildings, and structures that break the skyline.

Provides for an east-west utility corridor. (Note: Rationale stated that this corridor would serve Utah Power and Light

Company needs as well as other companies needing rights-of-way. The applicant (IPP) is proposing to use this route from Twin Buttes to Nevada-Utah Stateline (mileposts 44-90.)

Dixie National Forest

Enterprise Land Use Plans, Utah

Does not provide for utility corridor along IPP preferred route (Ox Valley-Bull Mountain) however, it does have a utility corridor in vicinity of Mountain Meadow. (Note: This alternative route segment for Route 2, 500-kV power transmission line would follow within this designated corridor for a portion of the length required to cross the Dixie National Forest.)

e. Transportation System

The transportation facilities are not in conflict with any existing land use plan.

12. Human Resources

Population

Table 8.3-11 summarizes population impacts of IPP by area. Millard County populations at the 1987 peak is estimated to reach 15,440. Thirty-two percent of this population would result from IPP. The Delta -Lynndyl area's projected population in 1987 is 10,700, of which 4,310 or 40 percent would be IPP related.

IPP's operational phase (from 1990 on) would add a total of 2,250 permanent residents to Millard and Juab counties (11 percent of the total population). One thousand nine hundred fifty persons are expected to be added to Millard County (18 percent) and 300 persons are expected to be added to Juab County (3 percent). Seventy-seven percent of the total additional IPP related population increase after 1990, (1,740 persons) would reside in the Delta-Lynndyl area.

Employment

Table 8.3-12 shows direct and indirect IPP related employment in the Millard and Juab County area. At the peak of the construction period in 1986, IPP would increase total employment in Millard and Juab counties by 3,340 jobs or 38 percent overall. Long-term employment is shown by statistics given for 1990, the first year that the plant's full complement of operation and maintenance personnel would be on hand and when the construction workforce would have departed. The 1990 project related direct and secondary employment would be 14 percent of the total employment for the two counties.

IPP also would bring about shifts in the distribution of Millard County employment. Higher paying construction employment would temporarily be Millard County's largest employment sector. The historical predominance of lower paying agriculture employment would be permanently changed. The 630 permanent jobs added to the manufacturing sector by IPP's operation and maintenance force would raise the manufacturing sector from the fifth largest employment sector to the county's largest. The commercial trade and government sectors

TABLE 8.3-11

Estimated IPP Population Increases by Community
1982, 1987, 1990

	Delta Lynndyl Area	Fillmore Area	Millard County	Eureka Area	Nephi Area	Juab County	Two County
1982							
Total Pop. Incl. IPP	6,050	3,900	9,950	900	6,370	7,270	17,220
Population Due to IPP	300	50	350	10	60	70	420
% Increase Due to IPP	5	1	4	1	1	1	3
1987							
Total Pop. Incl. IPP	10,700	4,740	15,440	1,110	7,960	9,070	24,510
Population Due to IPP	4,310	630	4,940	170	700	870	5,810
% Increase Due to IPP	67	15	47	18	10	11	31
1990							
Total Pop. Incl. IPP	8,570	4,480	13,050	1,030	8,070	9,100	22,150
Population Due to IPP	1,740	210	1,950	60	240	300	2,250
% Increase Due to IPP	25	5	18	6	3	3	11

Source: Architects/Planners Alliance, 1978.

TABLE 8.3-12

Estimated IPP Direct and Indirect Employment Impact
Millard and Juab Counties 1982-1990

	Years		
	1982	1986	1990
Millard County Employment			
Employment Incl. IPP	3,190	6,470	4,220
Employment Due to IPP	170	3,240	890
% Due to IPP	5.3	49.9	21.1
Juab County Employment			
Employment Incl. IPP	2,110	2,370	2,490
Employment Due to IPP	10	100	50
% Due to IPP	0.5	4.2	2.0
Total			
Employment Incl. IPP	5,300	8,840	6,710
Employment Due to IPP	180	3,340	940
% Due to IPP	3.4	37.7	14

Source: Architects/Planners Alliance.

are higher paying and would surpass agriculture employment as population growth increases local demand for goods and services and as the change in water use reduces land under cultivation.

Income

Table 8.3-13 shows projected personal income and per capita income for Millard and Juab counties.

IPP would contribute $29 million to the personal income of Millard County residents in 1986--39 percent of total personal income in the county. Juab County would gain $4.9 million in personal income in 1986--20 percent of its total personal income. The operation and maintenance phase of the project in years 1990 and beyond would add approximately 13 percent and 6 percent to personal income in Millard and Juab Counties respectively.

In 1986, the project would increase Millard County per capita income, shown on Table 8.3-14 by $1,057 or 24 percent and Juab County per capita income by $328 or 8 percent. During the operational phase, the plant is expected to add $40 (0.9 percent) and $17 (0.4 percent) to the Millard and Juab County figures respectively.

Agricultural Earnings

The conversion of water use to industrial use would reduce agricultural earnings approximately as shown on Tables 8.3-15 through 8.3-18. The total net loss of agricultural income under Scenario 1 would be about $778,000.00 or 5 percent the areas gross agricultural income of $14,161,000.00. The total net loss of agricultural income under Scenario 2 would be $981,000.00 or 7 percent of the areas gross agricultural income.

Infrastructures

At this writing no firm commitments have been made to provide the infrastructural needs identified under the following components. However, state and local governments are presently working with the applicant to provide these facilities as needed. Should these plans fail to develope or if through a lack of front-end money some of all of the additional facilities are not available at the population peak, the various services would be expected to decline in quality and quantity. As plans are carried out, population levels stabilize and additional tax revenues become available, the needed facilities could be brought up to appropriate standards.

Municipal Water--Treatment and Distribution

Water Supply

A comparison of the population that could be supported by existing municipal water rights with the projected IPP related population shows that ample water rights are available to absorb growth caused by IPP.

Water Treatment and Storage

The projected IPP population would exceed the design capacity of the water system by approximately 830 dwelling units. Therefore, the Delta-Lynndyl area would require an additional 132 MCD water storage and delivery systems to comply with State Health Department standards.

TABLE 8.3-13

Personal Income Millard and Juab Counties
1982, 1986, and 1990

	In 1978 Dollars		
	1982	1986	1990
Personal Income (Millions)			
Millard County			
Total Personal Income	41.7	75.1	62.0
Amount Due to IPP	2.5	29.0	7.8
Percent Income Due to IPP	5.0	39.0	13.0
Juab County			
Total Personal Income	20.4	24.9	21.3
Amount Due to IPP	0.4	4.9	1.3
Percent Increase Due to IPP	2.0	20.0	6.0

Source: Architects/Planners Alliance, 1979.

TABLE 8.3-14

Per Capita Income Millard and Juab Counties
1982, 1986, and 1990

	In 1978 Dollars		
	1982	1986	1990
Per Capita Income (1978 Dollars)			
Millard County			
Total Per Capita Income	4,435	5,439	4,496
Amount Due to IPP	125	1,057	40
Percent Increase Due to IPP	3	24	1
Juab County			
Total Per Capita Income	4,015	4,433	4,250
Amount Due to IPP	34	328	17
Percent Increase Due to IPP	1	8	0.4

TABLE 8.3-15

Projected Annual Decrease in Agricultural Production and Earnings In the DMAD Service Area Under Scenario Number 1[a]

Crop	Lost Production	Total Value in 1976 Dollars	Total Expenses in 1976 Dollars	Net Value in 1976 Dollars
Alfalfa Hay	8,000 tons	$ 385,000	$280,000	$105,000
Alfalfa Seed	979,200 lbs.	774,000	325,000	449,000
Grain	68,940 bu.	159,000	99,000	60,000
Corn	11,540 tons	191,000	136,000	55,000
Total		$1,509,000	$840,000	$669,000

[a]Assumes 5,500 acre-feet of ground water rights aquired by IPP in the DMAD Service Area.

TABLE 8.3-16

Projected Decrease in Agricultural Production and Earnings In the DMAD Service Area Under Scenario Number 2[a]

Crop	Lost Production	Total Value in 1976 Dollars	Total Expenses in 1976 Dollars	Net Value in 1976 Dollars
Alfalfa Hay	5,490 tons	$ 264,000	$192,000	$ 72,000
Alfalfa Seed	672,200 lbs.	512,000	223,000	289,000
Grain	47,340 bu.	109,000	68,000	41,000
Corn	7,920 tons	131,000	94,000	37,000
Total		$1,016,000	$577,000	$439,000

[a]Assumes 5,500 acre-feet of ground water rights aquired by IPP in the Central Utah Canal Service Area.

TABLE 8.3-17

Projected Decrease in Agricultural Production and Earnings
In the Central Utah Canal Service Area
Under Scenario Number 1[a]

Crop	Lost Production	Total Value in 1976 Dollars	Total Expenses in 1976 Dollars	Net Value in 1976 Dollars
Alfalfa Hay	3,820 tons	$184,000	$133,000	$ 51,000
Grain	32,720 bu.	75,000	47,000	28,000
Corn	990 tons	16,000	12,000	4,000
Potatoes	2,460,000 lbs.	93,000	67,000	26,000
Total		$369,000	$359,000	$109,000

[a]Assumes 5,500 acre-feet of ground water rights aquired by IPP in the DMAD Service Area.

TABLE 8.3-18

Projected Decrease in Agricultural Production and Earnings
In the Central Utah Canal Service Area
Under Scenario Number 2[a]

Crop	Lost Production	Total Value in 1976 Dollars	Total Expenses in 1976 Dollars	Net Value in 1976 Dollars
Alfalfa Hay	7,820 tons	$ 376,000	$ 273,000	$103,000
Grain	63,750 bu.	147,000	91,000	56,000
Corn	2,590 tons	429,000	307,000	122,000
Potatoes	2,460,000 lbs.	927,000	666,000	261,000
Total		$1,879,000	$1,337,000	$542,000

[a]Assumes 5,500 acre-feet of ground water rights aquired by IPP in the Central Utah Canal Service Area.

Water Storage (After Treatment)

It is estimated that IPP-related population growth would require an additional 1.32 million gallons of culinary water storage capacity in the Delta-Lynndyl area by 1986 to remain in compliance with State Health Department standards.

Sewage

Table 8.3-19 compares IPP-related population growth with projected excess sewage system capacity in each area. Negative numbers indicate that new capacity would have to be developed in the systems to adequately service population growth. Nephi and Fillmore area municipalities could absorb the anticipated growth.

It has been assumed that all population growth would occur within existing municipal boundaries in order to show a "worst case" condition. Were this to happen, waste water treatment capacity would need to be expanded by 44 percent or 2,800 new hookups in the Delta-Lynndyl area and by 75 percent or 210 new hookups in the Eureka area to service peak year population. In the two areas, however, growth serviced by septic tanks could occur outside municipalities diminishing or eliminating impacts on municipal sewage treatment facilities.

Solid Waste

According to the Utah Department of Social Services, Division of Solid Waste Management, all open dumps will have to be closed when the State begins enforcing the U.S. Resource Conservation and Recovery Act within three to five years. This act requires all solid waste disposal facilities to meet sanitary landfill requirements. Since all solid waste disposal facilities in Millard and Juab counties are open dumps, present sites will either have to be converted to sanitary landfills or new space acquired for new facilities. The need for these changes will occur regardless of the demand on solid waste facilities created by IPP.

Education

The effects of the IPP-related students on school facilities in the four impact areas are summarized on Table 8.3-20. IPP would add to an over crowded classroom problem that will already exist by 1982. The schools' present capacity would be exceeded by 1,255 students and 5 teachers in 1987 and 702 of those students (56 percent) would be attributable to IPP. The 1990 projection of 321 students and 14 teachers indicate the level of long-term effects of IPP on grades K-7.

In the Delta-Lynndyl area, IPP-related students would start to exceed secondary school absorption capacity in 1986. The IPP student population would peak in 1987 at 438 students and 19 teachers would be needed. Long-term IPP-related students are expected to level out at approximately 200.

In the Nephi area, by 1986, 91 students and 4 teachers, (approximately 21 percent) of the K-6 students exceeding capacity would be IPP-related. Likewise, in the Fillmore area, IPP would add a maximum of 95 and 81 students plus 8 teachers to already over capacity situations in grades K-6 and 7-12, respectively. At peak population in 1987, there would be about 4,820 students in the school system.

TABLE 8.3-19

Sewage Treatment Capacities[a] Compared
With IPP Related Population Projections
1982-1990

		Delta-Lynndyl Area	Eureka Area	Nephi Area	Fillmore Area
1982	Excess Sewage Capacity	2,150	10	5,090	6,850
	IPP Related Population	300	10	60	50
	Difference	1,850	0	5,030	6,800
1987	Excess Sewage Capacity	1,510	-40	4,140	6,590
	IPP Related Population	4,310	170	700	630
	Difference	2,800	-210	3,440	5,960
1990	Excess Sewage Capacity	1,070	-70	3,570	6,430
	IPP Related Population	1,740	60	240	210
	Difference	-670	-130	3,330	6,220

Source: Architects/Planners Alliance, 1978.

[a]Sewage capacity is defined as the difference between the capacity (numbers of persons) of the existing sewage disposal facilities and population due to normal growth. Negative numbers indicate the capacity would be exceeded by that amount.

TABLE 8.3-20

School Capacity[a] Compared With IPP Related Student Population
1982-1990

	1982	1987	1990
DELTA-LYNNDYL AREA			
Grades K-7			
Excess School Capacity	-173	-553	-720
Projected IPP-Related Student Population	55	702	321
Difference	-228	-1,255	-1,041
Grades 8-12			
Excess School Capacity	186	134	30
Projected IPP-Related Student Population	35	438	200
Difference	151	-304	-170
EUREKA AREA			
Grades K-6			
Excess School Capacity	-17	-17	-30
Projected IPP-Related Student Population	2	27	14
Difference	-19	-44	-44
Grades 7-12			
Excess School Capacity	152	143	142
Project IPP-Related Student Population	2	23	12
Difference	151	120	130
NEPHI AREA			
Grades K-6			
Excess School Capacity	-199	-400	-505
Project IPP-Related Student Population	9	110	50
Difference	-208	-510	-555
Grades 7-12			
Excess School Capacity	133	49	-20
Project Related Student Population	7	94	42
Difference	126	-45	-62
FILLMORE AREA			
Grades K-6			
Excess School Capacity	-176	-377	-490
Projected IPP-Related Student Population	8	95	44
Difference	-184	-472	-534

TABLE 8.3-20 (concluded)

	1982	1987	1990
FILLMORE AREA (continued)			
Grades 7-12			
Excess School Capacity	-13	-201	-320
Projected IPP-Related Student Population	6	81	37
Difference	-19	-282	-357

Source: Prepared by Architects/Planners Alliance.

[a]School capacity is defined as the difference between the school capacity and the projected student population under normal growth. Negative numbers indicate the amount by which the capacity would be exceeded.

Law Enforcement

In the Delta-Lynndyl area, IPP related population is expected to create a need for a maximum of eight additional law enforcement officers during the peak construction period, but only three additional officers during the post 1990 operation phase of the project. A maximum project related need for one additional officer is anticipated in the Nephi and Fillmore areas. Additional needs are based on the standard of 1.9 officers per thousand as recommended by the Six-County Commissioners Organization.

Fire Protection

By 1987, the Delta-Lynndyl area would need an additional pumper rated at 500 gallons per minute (g.p.m.) and the Nephi area would also need an additional 250 g.p.m. pumper.

Public Health

Hospitals

As shown in Table 8.3-21, the Delta-Lynndyl area's West Millard Hospital would be near capacity at the peak year of IPP's construction. However, some of the 18 existing long-term care beds could be used to meet the temporary peak demand.

The Nephi area's Juab County Hospital and the Fillmore Hospital would be able to absorb the peak year demand without exceeding the optimal capacities of the present facilities.

Professional Personnel

The Delta-Lynndyl area is the only area which would require additional medical personel. The peak year requirements, attributable to IPP, would be two physicians, three registered nurses, one licensed practical nurse, and one mental health worker in addition to the present number in the area. IPP-related permanent population from 1990 through the plant's operation phase would require one physician, one registered nurse, and one mental health worker to maintain current personnel to population ratios for rural areas of Utah.

Housing

At peak housing demand, approximately 2,210 permanent and temporary housing units would be needed to serve the IPP related population. Four hundred sixty of these units would be permanent and the remaining 1,750 would be temporary units such as campers, trailers, and man-camp units which would be removed as they become surplus. Table 8.3-22 shows housing needs.

IPP would be willing to participate in the provision of construction worker quarters for up to 300 plant construction workers. Such a facility would house construction workers in temporary quarters, and would have provisions for meals and leisure-time activities.

A housing demand analysis was prepared by proponents of IPP to assist local efforts to provide housing for the anticipated population growth. If adequately developed sites are not available for the remainder, worker shortages may create delays in construction and/or workers will rely more heavily on campers or trailers parked at random throughout the Delta-Lynndyl Area,

TABLE 8.3-21

Hospital Capacity in Peak Year (1987)

	Delta-Lynndyl Area	Nephi Area	Fillmore Area
Number of Beds Available	18[a]	31	22
Beds Needed in Peak Year	16.5	19.4	6.0
Peak Year Utilization as a percent of Capacity	92	63	27

Source: Architects/Planners Alliance, Inc.

[a]Eighteen additional beds are presently being used for long-term care; these could be used as primary hospital beds.

TABLE 8.3-22

Housing Needs Based Upon Increased Population of IPP
1982-1990

		1982	1986	1990
DELTA-LYNNDYL AREA				
Permanent Units Including IPP		1,160	1,570	1,710
No. Attributable to IPP		30	350	350
Percent attri. to IPP		2.6	22.3	20.5
MILLARD COUNTY				
Permanent Units Including IPP		2,390	2,970	3,240
No. Attributable to IPP		40	400	400
Percent attri. to IPP		1.7	13.5	12.4
JUAB COUNTY				
Permanent Units Including IPP		1,680	1,980	2,260
No. Attributable to IPP		10	60	60
Percent attri. to IPP		0.6	3.0	2.7
Two County Total				
Permanent Units Including IPP		4,070	4,950	5,500
No. Attributable to IPP	Temp	80	1,750	150
	Perm	50	460	460
Percent attri. to IPP		1.2	9.3	8.4

Source: Architects/Planners Alliance, Inc.

causing much of the visual blight associated with energy development at other locations. Also, housing supply shortages of any duration can be expected to have a direct inflationary effect on housing prices.

The permanent IPP-related population would demand only 460 permanent and 140 temporary housing units or 180 fewer permanent units than demanded at the peak of construction. If all permanent housing required for workers at peak construction is built, 30 percent of the permanent units would become vacant excess housing stock between 1988, when construction activity declines, and 1993 when projected non-IPP related population growth would reach levels to absorb the excess units. The value of permanent housing built for IPP workers is an important consideration in minimizing vacancy rates after peak construction. If the value of permanent housing reflects the financial capability of the construction workers, the future cost of renting or buying housing could prevent the secondary and operation and maintenance workers households from taking over such housing. Building excesses in either quantity or price could cause a discrepancy between housing inventory and housing consumers in the post-construction period.

Local Government and Finance

Local Government Administration

The increases in population, housing, and economic activity in the impact area would affect local government administration, especially in Millard County and the cities and towns in the Delta-Lynndyl Area. These effects would be translated into a need for additional personnel, materials, supplies, and space. Present local governmental operations and procedures would be stressed, especially during peak IPP construction. The most pressing needs would probably be personnel and office space. It is anticipated that the City of Delta and Millard County would have to hire two additional full-time administrative persons for each jurisdiction.

Net Effects of Local Costs and Revenues

Table 8.3-23 shows total additional costs for police, fire, water, sewer, administration, etc., amortized over 10 years and compared to total tax revenues (not including school district revenues).

The taxes from the IPP plant itself would be primarily responsible for the Millard County surpluses. Since all tax revenues from the plant would accrue to jurisdictions in Millard County, the costs imposed by IPP-related population in Juab County would not be completely offset by revenues. IPP would cause deficits in Juab County in all but two years of the construction period, ranging from $4,400 to $16,900. The table also shows a relatively small deficit of $1,400 for 1990 that is indicative of IPP's long-term fiscal impacts on Juab County.

All tax revenues from the plant have been somewhat arbitrarily assigned to the Delta-Lynndyl Area. It should be remembered that the boundaries of the impact area does not conform to the boundaries of all taxing units within the counties. For this reason, the deficits in the Fillmore Area and the surpluses in the Delta-Lynndyl Area are somewhat artificial. The added costs of law enforcement and county administration that would cause the deficit shown for the Fillmore Area would probably be better offset by IPP revenues than the Table indicates. Likewise, the surplus in the Delta-Lynndyl Area may be overstated.

TABLE 8.3-23

Comparison of Non-School Costs and Revenues Due to IPP
(Thousands of Dollars)
(in 1978 Dollars)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
				Delta-Lynndyl Area					
Highways	$184.0	$177.0	$170.2	$163.3	$156.4	$149.5	$142.6	$135.7	$128.8
Culinary Water	204.8	197.1	189.4	181.8	174.1	166.4	1,518.7	151.0	143.4
Sewage	120.0	115.5	111.0	106.5	102.0	97.5	93.0	88.5	84.0
Law Enforcement	0	14.7	48.4	84.9	127.8	115.8	121.8	90.3	45.2
Fire Protection	5.1	4.9	4.7	4.5	4.3	4.2	4.0	3.8	3.6
Recreation	44.6	43.0	41.3	39.6	37.9	36.3	34.6	32.9	31.3
Library Bookmobile	0	0	17.5	0	0	0	0	0	0
General Administration	14.0	14.0	28.0	28.0	28.0	28.0	28.0	28.0	14.0
Total Costs	$572.5	$566.2	$610.5	$608.6	$630.5	$597.7	$582.7	$530.2	$450.3
Real Property Taxes	7.0	46.0	209.9	655.0	1,314.0	2,639.0	3,854.0	4,793.0	5,487.0
Sales and House Taxes[a]	--	60.0	243.0	728.0	1,153.0	1,153.0	971.0	485.0	61.0
Retail Sales Taxes	3.0	8.9	21.8	37.1	44.1	39.3	30.6	16.6	9.7
Total Revenues	10.0	114.9	473.8	1,420.1	2,511.1	3,831.3	4,855.6	5,294.6	5,557.7
Net Total	-562.5	-541.3	-146.7	811.5	1,880.6	3,233.6	4,272.9	4,764.4	5,107.4
				Eureka Area					
Sewage	9.6	9.2	8.9	8.5	8.2	7.8	7.4	7.1	6.7
Total Costs	9.6	9.2	8.9	8.5	8.2	7.8	7.4	7.1	6.7
Real Property Taxes	--	--	1.0	2.0	3.0	3.0	2.0	2.0	2.0
Retail Sales Taxes	0.1	0.3	0.8	1.3	1.6	1.4	1.1	0.6	0.4
Total Revenue	0.1	0.3	1.8	3.3	4.6	4.4	3.1	2.6	2.4
Net Total	-9.5	-8.9	-7.1	-5.2	-3.6	-3.4	-4.3	-4.5	-4.3
				Fillmore Area					
Law Enforcement	0	0	22.4	14.7	14.7	20.7	14.7	14.7	20.7
General Administration	14.0	14.0	28.0	28.0	28.0	28.0	28.0	28.0	14.0
Total Costs	14.0	14.0	50.4	42.7	42.7	48.7	42.7	42.7	34.7
Real Property Taxes	1.0	1.0	5.0	9.0	10.0	11.0	10.0	9.0	6.0
Real Sales Taxes	0.4	1.3	3.1	5.2	6.2	5.5	4.3	2.3	1.4
Total Revenues	1.4	2.3	8.1	14.2	16.2	16.5	14.3	11.3	7.4
Net Total	-12.6	-11.7	-42.3	-28.5	-26.5	-32.2	-28.4	-36.4	-27.3

TABLE 8.3-23 (concluded)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
				Nephi Area					
Fire Protection	5.1	4.9	4.7	4.5	4.3	4.2	4.0	3.8	3.6
Law Enforcement	0	0	0	0	0	23.4	14.7	14.7	0
Total Costs	5.1	4.9	4.7	4.5	4.3	27.6	18.7	18.5	3.6
Real Property Taxes	1.0	1.0	4.0	7.0	8.0	8.0	8.0	7.0	5.0
Retail Sales Taxes	0.5	1.4	3.4	5.8	6.9	6.1	4.8	2.6	1.5
Total Revenue	1.5	2.4	7.4	12.8	14.9	14.1	12.8	9.6	6.5
Net Total	-3.6	-2.5	2.7	8.3	10.6	-13.5	-5.9	-8.9	2.9
				TOTALS					
Total Costs	601.2	594.3	674.5	664.3	685.7	681.8	651.5	598.5	495.3
Total Tax Revenues	13.0	119.9	491.1	1,450.4	2,546.8	3,886.3	4,885.8	5,318.1	5,574.0
Net Total	-587.2	-474.4	-193.4	786.1	1,861.1	3,184.5	4,234.3	4,718.7	5,078.7

Source: Architects/Planners Alliance, Inc.

[a]These taxes will accrue to Millard County as a whole, but are included in the Delta-Lynndyl area's taxes because of the plant's location.

Schools

School costs and revenues have been separated from other areas of potential public finance effects because school districts are part of a statewide financing system that absorbs both additional school operation costs and excess revenues associated with population migration. School tax revenues and costs (capital and operating) to the system caused by IPP-related population growth are shown on Table 8.3-24.

Quality of Life

Quality of life impact projections are made on the basis of what has occurred in other relatively sparsely populated, cultural homogeneous rural areas that have experienced rapid population growth from energy development projects. Comparisons with what has happened in other areas provide some general idea of potential quality of life impacts. The availability of new jobs and new indirect employment would provide new jobs for local residents. Many underemployed local residents would be able to upgrade their employment and income opportunities. Employment would be provided for new residents or some people who had left the community and wanted to return home to work. Increased employment and income opportunities associated with the proposed project would lead to temporary decline or shortages in community goals and services, followed by an improvement in the quality of life. In other energy growth areas in Utah, for example, "mini mall" and other shopping facilities have developed to improve the quality and variety of goods and services available to the local population.

On the more negative side, however, it seems almost inevitable that rapid energy-related growth is accompanied by inflation and higher prices. Many older residents of the area, who must live on fixed incomes, would be unable to benefit from the higher wages and would experience the most negative quality of life impacts, caused by competition for limited good, services, and facilities.

Workers would be younger on the average than the local population and, if patterns from other energy development areas of the West hold true, would be more likely to be single and without families. They would also be more religiously, culturally, and ethnically mixed than the present local population. The homogeneity of the local area has contributed to some rather clearly indentifiable patterns. Not only are religious activities organized by the dominant local Mormon culture, but so also are many of the social and cultural activities. Newcomers to the area who are not of the dominant culture are likely to have difficulty being integrated into the local communities. They are more likely to view themselves, and to be viewed by others, as outsiders by the existing population.

Local cultural values in the study area place a great deal of emphasis on such things as the importance and centrality of the family as a unit of interaction; a strong belief in law and order; and a certain distrust of people and ways that are defined as different from traditional Mormon patterns. New and long-time residents could have conflict over local issues. The increase in size and diversity of the local population would create greater difficulty in maintaining cohesion, integrating new residents into the local structure, and promoting concensus and cooperation in confronting community problems. However, communities charaterized by such a high degree of value concensus are often successful in working to solve community problems. The increase in size and diversity of the local population would create greater difficulty in maintaining

TABLE 8.3-24

Summary of School Costs and Revenues by Area
(in 1978 Dollars)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Delta-Lynndyl Area									
Construction Costs	0	0	0	0	727	677	651	626	601
Debt Retirement Revenue	0	0	180	570	1,174	2,401	3,530	4,405	5,056
Difference	0	0	180	-157	472	1,724	2,879	3,779	4,455
Eureka Area									
Construction Costs	0	0	0	13	13	12	12	11	11
Debt Retirement Revenue	0	0	0	1	2	2	1	1	1
Difference	0	0	0	1	-12	-11	-11	-10	-10
Nephi Area									
Construction Costs	0	0	0	132	127	122	118	112	107
Debt Retirement Revenue	0	0	2	4	5	5	4	4	3
Difference	0	0	2	-128	-122	-117	-114	-108	-104
Fillmore Area									
Construction Costs	0	0	0	113	109	105	101	97	93
Debt Retirement Revenue	0	0	3	5	6	6	5	5	4
Difference	0	0	3	-108	-103	-99	-96	-92	-89

Source: Architects/Planners Alliance, Inc.

cohesion, integrating new residents into the local structure, and promoting consensus and cooperation in confronting community problems (Albrecht, 1978). However, communities characterized by such a high degree of value consensus are often successful in working together to solve community problems.

Studies conducted in many of the energy boomtowns in the West have noted rather dramatic increases in social and personal problems. For example, Gilmore and Duff (1974) found that the caseload in the Sweetwater County mental health clinic in Wyoming increased tenfold as the population went from 18,000 to 30,000 in 3 years. Much higher rates of divorce, alcoholism, and drug abuse were also noted. Among the younger population, school drop-out and truancy rates increased significantly, probably as a result of problems at home between parents and between the teens and their parents. Communities in Carbon and Emery counties in Utah have also experienced some of these problems concurrent with rapid population growth. Crime rates have increased at a rate that is significantly higher than the increase in the local population. However, delinquency rates--often an excellent barometer of problems in a community--have not increased as rapidly as has the population. Increased mental health problems have been noted by the area comprehensive mental health clinics and increased drinking problems are reflected in increased arrest rates, more fights and disturbances, and high absenteeism from work.

It is anticipated that increased crime rates, suicide, divorce, and personal problems would be experienced as a result of population growth and diversification. Many of these increases would be a function of the importation of a more susceptible population than a direct function of growth. For example, divorce rates in energy boomtowns usually go up--often a result of the fact that newcomers are usually younger, have fewer children, and are more likely to come from differenct cultural backgrounds.

A substantial number of people who feel that they would benefit economically from the construction of IPP, believe that they would be able to sell their water. The water requirements of a power plant would provide an excellent market and price for water and, as one respondent replied, "We could sell our water and get out of debt." Another farmer stated, "We are farmers and it is almost impossible to make a profit. If we sell the water, it could bring in an income." Business people and those that provide services also reported that an increased population would be good for business and financial conditions would improve. This group included merchants, professionals such as lawyers, ranchers, and farmers.

Only 7 percent of those surveyed reported that they felt that their financial situation would be adversely impacted. It was pointed out by several respondents that water is the key to prosperity in this arid part of the state. The fear was expressed that a power plant would threaten more traditional ways of life in the community by monopolizing a large share of the available water. Local agriculture, in particular, was identified as being susceptible to a lack of water. A typical response was "If too much of the water goes to generating electricity, then farming and ranching will decline", (Albrecht, 1978).

Transmission Lines

The impact of constructing the transmission lines is expected to be temporary, based on the short-term introduction of the work force into the local economies. It is expected that the bulk of the salary income would not remain in the communities along the transmission route because most of the labor force would come from outside of the study area.

Positive monetary impacts to the communities adjacent to the corridors would be a one-time infusion into the local economy.

Property taxes on transmission lines would be the primary impact on the governments through whose jurisdiction the transmission lines pass. In all counties, the addition to the tax base would be beneficial. Table 8.3-25 shows tax related data for the affected counties.

TABLE 8.3-25

1978 Estimated Tax Revenue to Counties From Transmission Lines
(Dollars)

County	1978 Costs	1978 Assessed Value	1978 Tax Rate	1978 in Lieu Taxes
UTAH				
Millard	48,900,000	11,700,000	0.06075	633,000
Beaver	6,100,000	1,500,000	0.05864	78,000
Iron	13,800,000	3,300,000	0.05239	154,000
Washington	11,100,000	2,700,000	0.06255	150,000
Juab	11,100,000	2,700,000	0.053	127,000
Sevier	1,900,000	460,000	0.05210	21,000
Piute	2,800,000	550,000	0.05245	26,000
NEVADA				
White Pine	4,550,000	1,590,000	0.0360	57,000
Lincoln	31,000,000	10,850,000	0.0350	380,000

E. MITIGATING MEASURES NOT INCLUDED IN THE PROPOSED ACTION

1. Introduction

Company proposed design features and government agencies' standard requirements are discussed in Chapter 1 of Volumne I. Mitigating measures unique to the Lynndyl Alternative are discussed in this section. Measures are included only if they are feasible, committed, and enforceable by government agencies and would be implemented because of existing laws, court decisions, or agency policy.

2. Measures Unique to This Action and Required of the Applicant by Federal Agencies

Authority for requiring the following mitigating actions is granted under the same authority as described in Chapter 1 for standard requirements.

If the proposed project were approved, the applicant would be required to carry out the following on Bureau of Land Management (BLM), U.S. Forest Service (USFS), and Bureau of Reclamation (USBR) administered lands:

a. Blasting and other surface disturbances would be prohibited within 500 feet of all live springs, reservoirs or water wells.

b. During critical periods, transmission line construction would cease in elk, deer, sage grouse, desert tortoise, and bald eagle habitat along the transmission lines. Table 8.4-1 lists habitat areas and critical periods.

c. Following the advice of a qualified wildlife biologist as designated by the appropriate federal official, roads, railroads, towers, and other ground disturbing activities would be located 200 yards from identified active dens, burrows, nests, or roosting sites to protect the species listed in Table 8.4-2.

d. Use helicopters to erect towers and string conductors, in areas designated by the appropriate federal official, where access across the terrain or management constraints preclude standard construction methods.

e. The applicant would prepare photographic simulations of areas in which facilities are proposed within foreground-middleground areas of high scenic value or high sensitivity. Using the simulation as a guide, the applicant would design and locate structures to blend into the existing environment. Affected government agencies would evaluate and approve measures before construction is begun.

f. Transmission lines would be maintained and repaired using the same techniques as were used in original construction.

g. Prior to project approval, contemporary ethinic groups which may have special concerns for cultural resources in either proposed or alternative power transmission corridors would be consulted in order to identify sites or areas of special reli-

TABLE 8.4-1

Habitat and Periods of Concern

Species	Concern	Critical Periods	Transmission Line Segment	Mileposts[a]
California Transmission System				
Deer	Winter Range	Nov. 1-May 30	Lynndyl to Highland Jct. Line 1	126-128
Deer	Fawning	May 15-July 15	Lynndyl to Toquop Jct. Line 2	159-167
Desert Tortoise	Active Period	March-October	Lynndyl to Toquop Jct. Line 2	201-218
Utah Transmission System				
Deer-Elk	Winter Range	Nov. 1-May 30	Sigurd to Paragonah	13-70
Sage Grouse	Strutting Ground	Mar. 15-May 30	Lynndyl to Mona	28-38
		Mar. 15-May 30	Sigurd to Paragonah	55-65
Desert Tortoise	Active Period	March-October	Paragonah to St. George	80-84
Bald Eagle	Winter Roosting Sites	November-March	Sigurd to Paragonah	75-85
			Paragonah to St. George	5-10

[a]Locations shown on Figures 8.2-B through 8.2-G.

TABLE 8.4-2

Location of Animals of Concern
Along Transmission Line Systems

Species	Transmission Line Segment	Mileposts of Segment	Name of Area
California Transmission System			
Desert Tortoise	Lynndyl-Toquop	201-218	Beaver Dam Slope
Gila Monster	Lynndyl-Toquop	192-218	Beaver Dam Slope
Utah Transmission System			
Utah Prairie Dog	Sigurd-Paragonah	62-92	Buckskin Valley-Parowan Valley
	Parogonah-St. George	0-26	Parowan Valley-Cedar Valley
Desert Tortoise	Paragonah-St. George	70-74	St. George Area

gious or social significance. This applies to those transmission line segments in the State of California only.

3. Measures Required of the Applicant By State and Local Entities

The mitigating measures required on federal land could also be required on state and local government lands. Authority is granted to the State of Utah under the Utah Code Annotated (UCA) 1953, 65-2-1.

4. Evaluation of Mitigating Measures

By prohibiting blasting within 500 feet of springs, alteration of ground water regimes would be avoided (2-a).

By avoiding critical deer, sage grouse, and desert tortoise habitat during critical periods and limiting access (measure 2-b), no measureable impacts would occur to these species. The use of a qualified wildlife biologist who would direct placement of roads, railroads, towers, and other activities, would mitigate the impact to special non-game species (measure 2-c).

Implementation of mitigating measures 2-d, e, and f would reduce visual contrast impacts from clearing of vegetation, skylining, borrow areas, and highway crossings along all transmission lines. Structures would still be visible, and would often dominate the landscape character in spite of these measures.

F. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

Introduction

This section summarizes adverse impacts which would affect the human environment and which cannot be avoided should the proposal be implemented. The impacts mitigated in Section F have been removed from the total impacts described in Section E.

Air Quality

The discharge of pollutants into the atmosphere would be an unavoidable impact. According to IPP (1978) emissions of SO_2, particulates and nitrogen oxides would be:

Sulfur Dioxide (SO_2)

Residual sulfur dioxide (SO_2) emission rates would be approximately 55.6 tons per day using worst grade local coal with the units operating at 100 percent capacity.

Particulates

Assuming 99.75 percent control, particulates released would amount to 7.1 tons per day using worst grade local coal with the units operating at 100 percent capacity.

Nitrogen Oxides

Emissions using worst grade coal would be about 251.5 tons per day using worst grade local coal with units operating at 100 percent capacity.

Air Quality Standards

All state and federal air quality standards would be met.

Trace Elements

Coal contains small amounts of trace elements which would be released into the atmosphere during plant operation. Small amounts of trace metals may eventually accumulate in some ecosystems near the plant site, but the extent is unknown.

Visibility

No significant visibility reductions are calculated to occur at any existing or potential Class I areas as a result of emissions from the IPP power plant at the Lynndyl site. However, plant emissions would produce a brown haze at certain time within the Sevier Desert.

Topography, Geology, Mineral Resources, and Paleontology

Topography on 200 acres would be altered by the removal of 1.2 million cubic yard of borrow materials.

Fossil hunting and collection activities could have adverse impacts on paleontological resources within western Utah. Some important and useful fossils, both vertebrate and invertebrate, could be lost to the scientific community. Construction and maintenance activities associated with the transmission lines could damage or destroy paleontological materials. The extent of this impact cannot be quantified.

The probability of land use conflicts between commercial mineral extraction and construction and operation of power transmission lines are low.

One important area is the Pioche Mining District, Nevada. The Lynndyl to Highland Junction route segment, west of Pioche, is contiguous to an existing power line. It is not anticipated that conflicts with mining would occur by the construction of an additional power line.

Soils

An increase in off-road vehicles (ORV) travel would disturb vegetation on soils having a high potential for wind erosion. The rate of wind erosion would increase. Areas most likely to be impacted are dunes and playas which produce little vegetation. Depending on the sites disturbed, revegetation and soil stabilization could require from 10 to 30 years (SCS, 1978).

Construction activities would disturb soils which are classified as having high susceptibility to wind erosion (SCS, 1977). Erosion would increase as vegetation that serves to stabilize soils would be removed or crushed by construction equipment. The potential for increased erosion would be greatest on the 125 miles of high erosion hazard soils that would be affected by the transmission line systems (see Figures 8.2-B through 8.2-G).

Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).

Water Resources

Seepage and Discharge

Loss of seepage from the Central Utah Canal could reduce discharge by 650 acre-feet per year at Clear Lake Springs, 1,700 acre-feet at seeps west of Greenwood, and 750 acre-feet at Mud Lake Springs. This would represent a 4 percent reduction of flow at Clear Lake Springs and an unknown reduction at the remaining springs and seeps.

Seepage loss in the DMAD service area, conveyed to the extensive open drain system and then to the surrounding wetlands and playas, would be approximately 2,100 acre-feet per year, a 9 percent decrease from present levels.

Ground Water

Pumping a maximum of 5,500 acre-feet of water per year in the project area would begin to create a new cone of depression in the immediate vicinity of the wells and may alter ground water hydraulic gradients which would cause a slight shift in ground water movement.

Vegetation

Wetland vegetation would be influenced by an estimated 9 percent reduction in surface water. Also, the abandonment of Fool Creek Reservoirs (about 12 miles northeast of Delta, Utah), and abandonment of about 50 miles of the Central Utah Canal would affect wetland vegetation. The extent of the affects are for the most part unknown. Where water is permanently removed, however, aquatic and emergent vegetation would be eliminated.

Vegetation (Appendix 8.2-4) on 5,409 surface acres would be temporarily disturbed during construction and 2,353 acres would be occupied for the life of the project.

Even with federally required measures, it is possible that some individual threatened or endangered plants could be inadvertantly destroyed. It is not likely that the continued existence of any of the species would be jeopardized.

Animal Life

A 9 percent reduction in water flows to bottomlands would reduce the production of resident waterfowl and other marsh associated birds. Migratory waterfowl would also be affected. Abandonment of the Fool Creek Reservoirs would displace in excess of 2,000 migrant waterfowl and an unknown number of marsh associated birds.

Retirement of 7,250 to 7,760 acres of irrigated farm land in eastern Millard County could reduce food and cover for ringneck pheasants. Pheasant numbers would also be reduced if these idled farmlands were fully grazed by domestic livestock or vegetation removed by other means. This would represent a loss of approximately 8 percent of the pheasants in Millard County.

The additional people which the project would bring to central Utah would increase the hunting pressure on and harassment of the region's game and non-game species including the endangered peregrine falcon and bald eagle and could reduce animal populations. The degree of decline cannot be accurately predicted.

Rainbow, brook, lake, and cutthroat trout numbers in the region's lakes and streams would decline without supplemental plants from fish hatcheries. In addition, the average age and size of fish in these waters would decrease through greater harvest.

Removal of 1.2 million tons of borrow materials from 200 acres for the construction of the power plant would temporarily denude the borrow areas. Maximum forage lost until vegetation is fully re-established would provide forage for 15 deer for one month each year.

Approximately 2,803 acres of wildlife habitat would be disturbed during power line construction and 114 acres would be permanently occupied by power transmission tower pads and roads. New access roads would encourage more travel by recreationists and others into more remote areas. This increased travel would place additional hunting, poaching, and harassment pressures on wildlife, especially upon mule deer, raptors, and desert tortoise.

It is known (Ellis, et al., 1969) that raptors are often shot when perched on power poles or towers and raptor losses due to indiscriminate shooting would increase. If construction continued during the raptor nesting season, nest abandonment and decrease in hawk production would likely result.

Structures, if constructed in sage grouse concentration areas, would provide perches for raptors and make sage grouse more susceptable to predation. The magnitude of these losses cannot be accurately assessed.

Increased fishing pressures would be applied mainly to Oak and Corn Creeks, Minersville Reservoir, small streams, and lakes and streams in the Tushar Mountains within Central Utah. Rainbow, brook, lake, and cutthroat trout numbers would decline without supplemental plants from fish hatcheries. In additon, the average age and size of fish in these waters would decrease through increased harvest.

Cultural Resources

Vandalism to the cultural resources in the region would result from the increased numbers of people associated with the proposed project. Several hundred archaeological sites, 39 eligible for nomination to National Register of Historic Places, could be affected.

Wherever possible and feasible, cultural resources would be avoided by construction and related activities. If this is not possible, the BLM would consult with the appropriate State Historic Preservation Officer to determine the most satisfactory means of mitigating damage. Even with present salvage techniques, some scientific and educational information could be lost.

The introduction of visual elements out of character with the following sites would detract from their historic setting.

Old Irontown, Iron County, Utah
Mountain Meadows Historic Site, Washington County, Utah
Bristol Wells Town site, Lincoln County, Nevada

Recreation and Aesthetics

Recreation

Recreation attractions would receive increased use.

If boating related and sanitation facilities were not expanded at Gunnison Bend Reservoir and Sevier Bridge Reservoir to meet the anticipated increase in use, sanitation and garbage problems would develop and the recreation experience would be reduced. Undeveloped areas would have sanitation and garbage problems. Areas near the Delta-Lynndyl population center may receive more week day and year-round use than at present. The appeal of recreation attraction areas within the Sevier Desert would be reduced for some visitors, particulary at the Little Sahara Recreation area. Other dispered recreational activities would also increase. Off-road vehicle use is expected to increase considerably in the regional setting, resulting in expanded management problems.

Developed recreation sites (camping and picnicking) are insufficient to serve the new population. Additional recreational pressures would most often occur at sites presently being used at greater than 20 percent of their design capacity, increasing use to 40 percent or more at many of the sites, which would result in overcrowding and deterioration of the environment and facilities. Overcrowding and deterioration would be intensified at sites presently being used at greater than 40 percent capacity.

The increase in permanent population would result in additional competition for available fish and game. Less hunter and fisherman success and dissatisfaction with the recreation experience are likely results.

Existing city park acreage would be sufficient to serve the new population. Additional municipal recreation facilities, including a swimming pool, softball field, track, and tennis court, may be needed in the Delta area (Architects/Planners Alliance, 1978).

The presence of transmission lines may cause a reduction in the aesthetic quality of the recreation experience for some people visiting the 18 recreation attractions adjacent to the transmission systems.

Aesthetics

The plant's stacks, buildings, and emissions would dominate the landscape as viewed from U.S. Highway 50. The plant would be visibile (low to high contrast) from other surrounding highways, communities, and recreation attraction areas as far as 40 miles distant. It would be considered a landmark of interest to some and an aesthetically degrading intrusion to others.

The transmission lines would cause visually adverse man-made contrast in or near visually sensitive areas such as major travel routes, primary highway crossings, high quality scenic areas, communities, or in areas with recreational values.

Where proposed transmission lines would parallel existing lines, additional contrast would generally not add appreciably to present contrast.

The power transmission systems would cross highways in areas of low quality scenery that would be viewed by passengers in a total of 20,095 vehicles daily. Near the plant site, both California lines would parallel Highway 272 (milepost 0-10, Figures 8.2-B and C) and would be visibile to travelers in 200 vehicles daily. The Lynndyl to Toquop Junction line would parallel Utah Highway 18 (milepost 161-164, Figure 8.2-B) and would be visible (medium contrast) to travelers in 455 vehicles daily, as well as from the town of Enterprise, Utah. The line would also pass through the scenic, sensitive Mountain Meadow area (milpeost 162-179, Figure 8.2-B) and would degrade its aesthetic values (high contrast). The Lynndyl to Highland Junction line would cross Utah's West Desert, an undeveloped area having open space value (milepost 55-130, Figure 8.2-C). The Lynndyl to Toquop Junction line would cross through Utah's Black Rock and Escalante Desert, undeveloped areas having open space values (milepost 25-80), parallel Highway 272 (milepost 0-10, Figures 8.2-D, E, and F), visible to travelers in 200 vehicles daily. The Lynndyl to Gonder line would be routed through two scenic, sensitive areas, Marjum Canyon (milepost 25-35, Figure 8.2-E, and the Wheeler Peak foothills (milepost 45-50). The Sigurd to Paragonah line would be routed through one scenic, sensitive area (the Tushar Mountain foothills milepost 100-110, Figure 8.2-F). In all areas aesthetic values would be somewhat reduced (medium contrast) although the areas have already been disturbed.

The transmission systems would be visible from 18 adjacent recreation attractions or areas of high quality (Class A) scenery. Additional contrast would be low as viewed from all areas except Coyote Hills, Fossil Mountain, and the marked section of the Dominquez-Escalante Trail where contrast would be high and Weaver Creek where the additional contrast would be medium. The transmission systems would be visible from portions of nine areas with potential for wilderness designation as follows:

Area	Anticipated Contrast
King Top (WSA UT-050-070)	High
Fortification Range (WSA NV-040-177)	Low
Mt. Moriah (RARE II 4-332)	Low
Wheeler Peak (RARE II 4-359)	Low
Howell Peak (WSA UT-050-007)	Medium
Notch Peak (WSA UT-050-078)	Low

Roadless Unit NV-040-100	Medium
Swamp Cedar (ISA NV-040-089)	Medium
Pygmy Sage (ISA NV-040-099)	Low

The addition of a building and tower at the Big Mountain Microwave Communication Station would make the site more obvious to residents of Enterprise and to travelers on Highway U-18.

Land Use

An annual maximum of 44,700 acre-feet of irrigation water would be transferred from agricultural use to industrial use. Under the two scenarios developed for obtaining 5,500 acre-feet of ground water (see Water Resources), 7,250 to 7,760 acres of agricultural land could be removed from production.

The retirement of 7,250 to 7,760 acres would result in the loss of annual crop production for the life of project. As compared to 1977 Utah harvest figures, crop losses would be equivalent to 1 percent of Utah's annual alfalfa production, 51 percent of the alfalfa seed, 3 percent of the grain, and 29 percent of the corn and potato production.

Three USFS RARE II FES recommended areas, five BLM Wilderness Study Units, and one uninventoried BLM roadless unit identified by management planning as having primitive and wilderness values may receive additional ORV and other visitor use, resulting in degradation of wilderness values.

Land Use Plans and Controls

The power generating station and support facilities are not compatible with Millard County's Zoning Ordinance Number 78. The area's current designation is Open Range and Forest (RF-1), and a zoning variance would be required for plant construction.

The transmission routes would conflict with various land use plans. Table 8.3-11 summarizes conflicts.

Human Resources

Population

Total population in Millard and Juab Counties at the 1987 peak is estimated to reach 15,440--32 percent of which would result from IPP. IPP's operational phase (from 1990 on) would add a total of 2,250 permanent residents to Millard and Juab counties (11 percent of the total population).

Employment

At the peak of the construction period in 1986, IPP would increase total employment in Millard and Juab counties by 3,340 jobs or 38 percent overall. The 1990 project related direct and secondary employment would be 14 percent of the total employment for the two counties.

IPP also would bring about shifts in the distribution of Millard County employment. Higher paying construction employment would temporarily be Millard County's largest employment sector.

Infrastructures

Water

It is estimated that IPP-related population growth would require water for 830 dwellings and an additional 1.32 million gallons of culinary water storage capacity in the Delta-Lynndyl area by 1987.

Sewage

Waste water treatment capacity would need to be expanded by 44 percent in the Delta-Lynndyl area and by 75 percent in the Eureka area to service peak year population. Nephi and Fillmore area municipalities could absorb the anticipated growth.

Solid Waste

All solid waste disposal facilities in Millard and Juab counties are open dumps, present sites will either have to be converted to sanitary landfills or new space acquired for new facilities. The need for these changes will occur regardless of the demand on solid waste facilities created by IPP.

Education

IPP would add to a problem that will already exist by 1982. The schools' present capacity would be exceeded by 1,255 students in 1987 and 702 of those students (56 percent) would be attributable to IPP. At this time, there would be 4,820 students in the school system. The 1990 projection of 321 students indicate the level of long-term effects of IPP on grades K-7.

Law Enforcement

In the Delta-Lynndyl area, IPP related population is expected to create a need for a maximum of eight additional law enforcement officers during the peak construction period, but only three additional officers during the post 1990 operation phase of the project. A maximum project related need for one additional officer is anticipated in the Nephi and Fillmore areas.

Fire Protection

The Delta-Lynndyl area would need an additional pumper rated at 500 gallons per minute (g.p.m.) and the Nephi area would also need an additional 250 g.p.m. pumper.

Public Health

Hospitals

West Millard Hospital would be near capacity at the peak year of IPP's construction. However, some of the 18 existing long-term care beds could be used to meet the temporary peak demand.

The Nephi area's Juab County Hospital and the Fillmore Hospital would be able to absorb the peak year demand without exceeding the optimal capacities of the present facilities.

Professional Personnel

The Delta-Lynndyl area is the only area which would require additional medical personnel. The peak year requirements, attributable to IPP, would be two physicians, three registered nurses, one licensed practical nurse, and one mental health worker in addition to the present number in the area. IPP-related permanent population from 1990 through the plant's operation phase would require one physician, one registered nurse, and one mental health worker to maintain current personnel to population ratios for rural areas of Utah.

Housing

At peak housing demand, approximately 2,210 housing units would be needed to serve the IPP related population. Four hundred sixty of these units would be permanent and the remaining 1,750 would be temporary units such as campers, trailers, and man-camp units which would be removed as they become surplus.

The permanent IPP-related population would demand only 460 permanent and 140 temporary housing units or 180 fewer permanent units than demanded at the peak of construction. If all permanent housing required for workers at peak construction is built, 30 percent of the permanent units would become vacant excess housing stock between 1988, when construction activity declines, and 1993 when projected non-IPP related population growth would reach levels to absorb the excess units.

Local Government and Finance

Local Government Administration

The increases in population, housing, and economic activity in the impact area would affect local government administration, especially in Millard County and the cities and towns in the Delta-Lynndyl Area. These effects would be translated into a need for additional personnel, materials, supplies, and space. Present local governmental operations and procedures would be stressed, especially during peak IPP construction. The most pressing needs would probably be personnel and space. It is anticipated that the City of Delta and Millard County would have to hire two additional full-time persons for each jurisdiction (APA, 1978).

Net Effects of Local Costs and Revenues

The taxes from the IPP plant itself would be primarily responsible for the Millard County surplus of $5.1 million in 1990. IPP would cause tax deficits in Juab County ranging from $4,400 to $16,900.

Quality of Life

Quality of life impact projections are made on the basis of what has occurred in other relatively sparsely populated, cultural homogeneous rural areas that have experienced rapid population growth from energy development projects. The provision of new jobs that would be made available by the proposed project, as well as the increased indirect employment opportunities, would make it possible for many local residents to remain or former ones to return. Increased employment and income opportunities associated with the

proposed project would lead to temporary decline or shortages in community jobs and services, followed by an improvement in the quality of life.

On the negative side, however, it seems almost inevitable that rapid energy-related growth is accompanied by inflation and higher prices. Many older residents of the area, who must live on fixed incomes, would be unable to benefit from the higher wages and would experience the most negative quality of life impacts.

The construction phase of the project would result in a more diverse population. Other communities in Utah have also experienced some problems concurrent with rapid population growth. Crime rates have increased at a rate that is significantly higher than the increase in the local population. However, delinquency rates--often an excellent barometer of problems in a community--have not increased as rapidly as has the population. Increased mental health problems have been noted by the area comprehensive mental health clinics and increased drinking problems are reflected in increased arrest rates, more fights and disturbances, and high absenteeism from work.

It is anticipated that increased crime rates, suicide, divorce, and personal problems would be experienced as a result of population growth and diversification. Many of these increases would be a function of the importation of a more susceptible population than a direct function of growth. For example, divorce rates in energy boomtowns usually go up--often a result of the fact that newcomers are usually younger, have fewer children, and are more likely to come from different religious backgrounds.

A substantial number of people who feel that they would benefit economically from the construction of IPP, believe that they would do so because they would be able to sell their water rights to IPP.

Transmission Lines

The socioeconomic impacts of constructing the transmission lines are expected to be temporary, based on the short-term introduction of the work force into the local economies.

Increases in property tax revenues on transmission lines would be the primary impact on the governments through whose jurisdiction the transmission lines would pass.

G. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The large scale increase in human activity involved with the proposal would derive short term values from the environment which would affect its long term productivity. For IPP, the short term is the project's predicted life--35 years. Long-term is the period beyond the project's predicted life.

Cumulative effects of coal development in the Carbon-Emery County area, as well as cumulative effects on air quality, are discussed in the Draft of the Environmental Statement: Development of Coal Resources in Central Utah. That statement projects the mining of a total of 383,000,000 tons of coal, leaving another 383,000,000 tons of unrecoverable coal in the mines, and disturbance of up to 2,400 acres of land for mining and associated activities. Coal and energy development is not expected to cause air pollution which would exceed allowable standards. Other cumulative impacts identified (but not quantified) are subsidence and subsequent changes in water flows; increased landslides, rockslides, rockfalls; scars left after reclamation of mining areas; loss of wildlife and wildlife habitat; damage to archaeological and paleontological values; and the effects of more people moving to areas near the mines.

IPP would use water, coal, air, space, and community services. They would add about 10 percent to the present population in the Millard-Juab County area. These people and their families would build homes, attend school, shop, and recreate within the area.

The 296,000,000 tons of burned coal would be gone forever, as would any fossil record contained in that coal. The coal would have been mined by methods which leave about 50 percent of the coal in the mine. Unless unforeseen techniques in coal mining were developed, the remaining coal would never be recovered. More efficient mining techniques could be used if they were developed while the mines were still operational. Overall system energy efficiency would be approximately 20.6 percent (University of Oklahoma, 1975).

Burning coal to run the units would release pollutants into the atmosphere, but emissions would cease when plant operations ceased. During the predicted 35 years of operation, other air-polluting projects may be limited in the Millard-Juab county area. Any reduction in visual range or clarity within areas of special interest would cease when plant operations stop.

Scars caused by disturbance of soils and vegetation on 2,803 acres for transmission line construction, would gradually heal, but could still be apparent in some areas after the project's life. Even with federally required measures, it is possible that some individual threatened or endangered plants or animals could be inadvertantly destroyed. It is not likely that the continued existence of any of the species would be jeopardized.

Illegal removal or destruction of archaeological and paleontological remains would result in a loss of some scientific understanding. Present archaeological and paleontological salvage techniques do not insure total information recovery.

The transmission line might serve another power source and would probably remain beyond the project's life. When the generating units have become obsolete, the generating complex could be kept in reserve for peak electrical loads or could be redesigned or rebuilt to house up-to-date generating facilities.

The aesthetic values would change as preceived by the public, but such changes would not be permanent. Local people would become accustomed to the change, but persons traveling through the area may realize the short-term loss

of the quality of the present visual experience. Visual impacts, especially from the stack plume, would continue for the duration of power plant operation as a short-term visual impact. Even though transmission lines could be removed after the IPP power generation were discontinued, it is possible that the major transmission lines would not be dismantled, but would be used in conjunction with other power sources.

Those people now living in Central Utah would be aware of marked changes in social and economic patterns. Social consequences would rapidly occur, extend to varying degrees throughout the short and the long-term, and involve changes in the present economic situation, local political influences, local educational system, religious mixture of the people, local governmental services, and community organizations and associations.

H. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Many natural, human, man-made, and monetary resources would be irreversibly or irretrievably committed if IPP were built. Irreversible commitment is defined as incapable of being reversed; once initiated, action would continue. Actions committing future generations to continue a similar course may be considered irreversible. Irretrievable is defined as irrecoverable; not retrievable; once used, not replaceable.

Some resources, such as air quality and water, would be irretrievably affected during plant operation. Others, such as coal, would be consumptively used and could never be replaced. Some theoretically reversible commitments would, in practice, be irreversible; the commitment of land occupied by the generating station would be such a commitment.

Table 8.7-1 is a list of irreversible and irretrievable commitments for IPP.

TABLE 8.7-1

Irreversible and Irretrievable Commitments for IPP

Resource	Reason for Commitment	Commitment	
		Irreversible	Irretrievable
Air Quality	Degradation caused by emissions from generating station and work force.	no	project life
Topography and Geology	Alteration by removal of 1.2 million tons of borrow material	yes	yes
Minerals	Mined and unrecoverable coal: 592,000,000 tons.	yes	yes
	Consumptive use of 3,700,000 tons of lime.	yes	yes
	Diesel fuel for coal transport: 271,000,000 gallons.	yes	yes
	Fuel oil (#2 diesel) for generator startup: 147,000,000 gallons.	yes	yes
Paleontological Resources	Disturbance and loss of fossils by construction and vandalism.	yes	yes
Water Resources	Change in use of 13,900 acre-feet of water now used for irrigation and 31,700 acre-feet used by evaporation and transpiration to industrial use.	no	project life

TABLE 8.7-1 (continued)

Resource	Reason for Commitment	Commitment Irreversible	Commitment Irretrievable
	Five thousand two hundred acre-feet reduction in water supply to springs and seeps and wetlands due to diversion of canals and pumping of ground water.	no	project life
Vegetation	Clearing for construction.	no	until revegetated
	Loss of riparian vegetation due to diversion and pumping of water.	no	yes
	Occupancy by buildings, towers, etc.	yes	yes
	Loss of individual candidate, proposed, or officially listed threatened or endangered plants.[a]	yes	yes
Animal Life	Loss of wildlife and their reproductive potential through increased habitat loss, inadvertant kills, hunting, and harassment.	no	yes
	Loss of threatened or endangered animals.[a]	yes	yes
Cultural Resources	Disturbance of sites by construction or vandalism.	yes	yes
Recreation and Aesthetics	Increased use of recreational sites.	no	yes
	Contrast of railroad, transmission lines, and other structures.	no	Life of facilities and structures
	Contrast from clearing of vegetation for transmission line construction.	no	until revegetated
	Possible air quality degradation and reduction in visibility.	no no	project life
Land Use	Retirement of up to 7,760 acres of irrigated land and related crop production due to shift in water use.	no	yes

TABLE 8.7-1 (concluded)

Resource	Reason for Commitment	Commitment Irreversible	Commitment Irretrievable
Human Resources	Change in lifestyle.	yes	yes
	38,080 work-years labor for construction and operation of IPP.	no	yes
Human Health and Safety	More accidents from increased traffic and construction activities.	no	yes
Building materials	Consumptive use of: 333,725 cubic yards concrete 14,400 cubic yards of asphalt 1.2 million cubic yards sand, gravel, and fill 23 miles of pipe 28,679 tons conductor 12,540,000 board feet of wood.	yes	yes

[a]No extinction of any species is expected.

I. ALTERNATIVES

This section identifies alternatives associated with the Lynndyl site and is confined to transmission line routing. The alternatives section of the Salt Wash portion of this statement (Volume I) discusses alternative plant design and operating methods such as alternative cooling systems, particulate control, and transmission line voltages. Volume III contains a discussion of alternatives to the Intermountain Power Project itself.

1. Alternative Transmission Systems (Lynndyl Plant Site)

Ten alternative segments for the Lynndyl portions of the power transmission systems have been identified.

1. Leamington Canyon (Figure 8.8-1, Table 8.8-1)
2. Escalante Desert (Figure 8.8-3, Table 8.8-2)
3. Connors Pass (Figure 8.8-5, Table 8.8-3)
4. Baking Powder Flat (Figure 8.8-7, Table 8.8-4)
5. Lake Valley--Pioche--
   Dry Lake Junction (Figure 8.8-9, Table 8.8-5)
6. Black Rock (Figure 8.8-11, Table 8.8-6)
7. Lund (Figure 8.8-13, Table 8.8-7)
8. Mountain Meadow (Figure 8.8-15, Table 8.8-8)
9. King Top Wilderness Study
   Area Alternative (Table 8.8-9)
10. Roadless Unit NV-040-100
    Alternative (Table 8.8-10)

Tables 8.8-1 through 8.8-8 compare the alternatives and the part of the proposed transmission line routes which would be replaced. Standard mitigating measures for transmission line construction, listed in Section G of Chapter 1 (Salt Wash, Volume I), would also apply to alternative transmission lines. Tables 8.8-9 and 8.8-10 compare wilderness values and visual resources of minor realignments which would avoid conflicts with wilderness values.

TABLE 8.8-1

Leamington Canyon Alternative Route
Comparison of Alternative to Preferred Route
Utah Transmission System

Leamington Canyon Alternative Route	Lynndyl to Mona Proposed Route
Route Description	
Two 345-kV a.c. transmission lines	
This alternative route would extend eastward from the Lynndyl generating station, passing north of the town of Lynndyl and through Leamington Canyon to a point about 15 miles southwest of Nephi, Utah where it rejoins preferred route at milepost 31. Figure 8.8-1.	The proposed route would extend east from the generating station crossing Highway U-50 about 6 miles south of Lynndyl and then through Leamington Pass.
Length of route - 29 miles Width of right-of-way - 300 ft. Area within right-of-way - 1,055 ac. BLM - 18 miles USFS - 0 miles State - 1 mile Private - 10 miles	Length of route - 31 miles Width of right-of-way - 300 feet Area within right-of-way - 1,127 ac. BLM - 16 miles USFS - 2 miles State - 2 miles Private - 11 miles
Structures: Acres Disturbed 105, Acres Occupied 4 New roads: Acres Disturbed 43	Structures: Acres Disturbed 112, Acres Occupied 5 New roads: Acres Disturbed 44
Description of the Environment	
Figure 8.8-2 summarizes the alternative's environmental setting.	Figure 8.2-D, milepost 0 to 31 summarizes the environmental setting of the segment which would be replaced.
Impacts	
Paleontology	**Paleontology**
Approximately 6 miles of geologic formations with medium paleontological significance and 23 miles with low would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.	Approximately 4 miles of geologic formations with potentially medium paleontological significance and 27 with low significance would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.

LEAMINGTON CANYON ALTERNATE ROUTE

FIGURE 8.8 -1

ENVIRONMENTAL PROFILE
LEAMINGTON CANYON ALTERNATIVE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- , Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

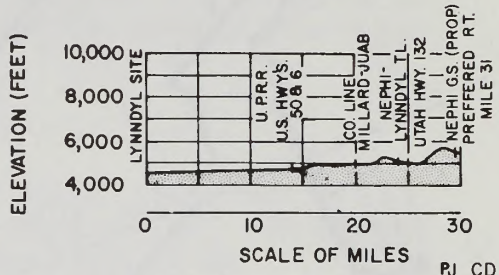
POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance



VEGETATION	CD	UA	CD	PJ	CD	
SOIL TYPES	6	4	5	4	5	
EROSION HAZARD	2	1				
SCENIC QUALITY	C	B	C			
VISUAL ZONE	F/M	B	F/M	SS		
SENSITIVITY	M	H	M	L		
EXISTING CONTRAST	L	M	L			
LAND USE	R	A	R			
PLANNING UNIT	SEVIER DESERT	TINTIC				
A. O. S. C.						
POLITICAL SUB.	MILLARD CO. (UT)					
SPECIAL ANIMALS	NONE					
GAME ANIMALS		D-W	SG			
PALEONTOLOGY	L	M	L			
CULTURAL RESOURCES			5(4			

FIGURE 8.8 -2

TABLE 8.8-1 (continued)

Leamington Canyon Alternative Route	Lynndyl to Mona Proposed Route
Soils	**Soils**
Route would cross 21 miles of high erosion hazard soils. Erosion would be localized on disturbed areas and no impacts on other resources would be expected. Revegetation without seeding could take 10 to 20 years (SCS, 1978).	Route would cross 22 miles of high erosion hazard soils. Erosion would be localized on disturbed areas. No impacts on other resources would be expected. Revegetation without seeding could take 10 to 20 year (SCS, 1978).
Vegetation	**Vegetation**
No candidate, proposed, or listed threatened or endangered plant species are known to occur within or near this route.	No threatened, proposed or listed threatened or endangered plant species are known to occur within or near this route.
Animal Life	**Animal Life**
No issue identified.	Strutting grounds and sage grouse could be disturbed (mileposts 28-38) by construction. Raptors could use towers for perching sites and predation on sage grouse.
Cultural Resources	**Cultural Resources**
Archaeology: Construction could damage five sites, four of which are eligible for nomination to the National Register of Historic Places. The introduction of visual elements out of character with the Topaz War Relocation Center site, Millard County, Utah, would detract from the historic setting of this site. It is currently (April, 1979) listed on the National Register of Historic Places.	Archaeology: Construction could damage one site. It is eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	**Recreation and Aesthetics**
Transmission lines would cross two highways and would have the following visual impacts:	Transmission lines would cross two highways and would have the following visual impacts:

TABLE 8.8-1 (continued)

Leamington Canyon Alternative Route			Lynndyl to Mona Proposed Route		
Highway Crossings	ADT	Anticipated Contrast	Highway Crossings	ADT	Anticipated Contrast
US-50	665	High	US-50	850	High
U-132	275	High	U-125	155	High

The powerline would parallel Highway U-132 through the narrow, Leamington Canyon (mileposts 13-27). It would be visible (high contrast) and degrade the aesthetic quality of the Canyon to motorists in 275 vehicles daily.

The powerline would parallel Highway 272 (milepost 0-8) and would be visible to motorists in 200 vehicles daily. A dirt surface road through Leamington Pass (mileposts 20-24) would also be parallel.

Land Uses

Private agricultural land (18 acres) could be disturbed along this alternate route by powerline construction and could reduce crop yields for 1 year if construction activities occur during the growing season.

Land Uses

Private agricultural lands (34 acres) could be disturbed along this portion of route by powerline construction and could reduce crop yields for 1 year if construction activities occur during the growing season.

Mitigating Measures

Animal Life

No issue identified.

Animal Life

Impacts on sage grouse could be mitigated by ceasing powerline construction on strutting grounds (milepost 28-38) during March 15-May 30.

Recreation and Aesthetics

No mitigation identified.

Recreation and Aesthetics

Use helicopters to erect towers and string conductors in areas designated by the appropriate federal official where access across the terrain or management constraints preclude standard construction methods.

The transmission lines would be maintained and repaired using the same techniques as were required in original construction.

TABLE 8.8-1 (continued)

Leamington Canyon Alternative Route	Lynndyl to Mona Proposed Route
Adverse Impacts Which Cannot Be Avoided	
Paleontology	Paleontology
Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information could exist.	Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information could exist.
Soils	Soils
Some accelerated erosion would occur along 21 miles (about 94 acres) of route with high erosion hazard soils. Erosion would be localized on disturbed areas and no other resource would be are affected. Complete revegetation without seeding could take 10-20 years (SCS, 1978).	Some accelerated erosion would occur along 22 miles (about 98 acres) with high erosion hazard soils. Erosion would be localized on the disturbed areas and no other resources would be affected. Complete revegetation without seeding could take 10-20 years (SCS, 1978).
Animal Life	Animal Life
No issue identified.	Power transmission towers would provide perching towers for raptors, and result in increased predation on grouse.
Cultural Resources	Cultural Resources
Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.	Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.
Recreation and Aesthetics	Recreation and Aesthetics
Powerlines would cross two highways and would be visible to travelers in a total of 940 vehicles daily. Powerlines would parallel Leamington Canyon Highway-U-132 for 14 miles, contrast would be high. Aesthetic quality of narrow canyon would be reduced.	Powerlines would cross two highways and would be visible to travelers in a total of 1,005 vehicles daily. Powerlines would parallel Highway 272 for 8 miles and a dirt road 4 miles and cause high visual contrast.

TABLE 8.8-1 (concluded)

Leamington Canyon Alternative Route	Lynndyl to Mona Proposed Route
Land Use	Land Use
Agricultural lands would be crossed along portions of this route. Access roads and towers would disturb about 18 acres and temporarily reduce crop yields, if construction activities occurred during the growing season.	Agricultural lands would be crossed along portions of this route. Access roads and towers could disturb 34 acres of this agricultural land and temporarily reduce crop yields, if construction activities occurred during the growing season.

TABLE 8.8-2

Escalante Desert Alternative Route
Comparison of Alternative to Preferred Route
Utah Transmission System

Escalante Desert Alternative Route	Paragonah to St. George Proposed Route
Route Description	
One 230-kV a.c. Transmission Line	
The alternative route would leave proposed route about 8 miles southwest of Paragonah substation and extend west 20 miles to join proposed line 2, 500 kV d.c. route; then southwesterly about 20 miles to near the mouth of Holt Creek Canyon; then southernly 6 miles to Mountain Meadow (milepost 47 preferred route). Figure 8.8-3.	Route would extend southwesterly, passing east of Three Peaks and north of Harmony Mountain and continuing southwesterly near Pinto to the Mountain Meadow vicinity (mileposts 8-47).
Length of route - 46 miles Width of right-of-way - 110 ft. Area within right-of-way - 613 ac. BLM - 15 miles FS - 5 miles State - 2 miles Private - 24 miles	Length of route - 39 miles Width of right-of-way - 110 ft. Area within right-of-way - 520 ac. BLM - 6 miles FS - 13 miles State - 1 mile Private - 19 miles
Structures: Acres Disturbed 166, Acres Occupied 8 New roads: Acres Disturbed 43	Structures: Acres Disturbed 140, Acres Occupied 6 New roads: Acres Disturbed 27
Description of the Environment	
Figure 8.8-4 summarizes the environmental setting.	See Figure 8.2-M summarizes the environmental setting.
Impacts	
Paleontology	**Paleontology**
Approximately 6 miles of geologic formations with medium paleontological significance and 40 with low significance would be crossed. Due to limitations in salvage techniques an unquantifiable loss of scientific-educational information would result.	Approximately 2 miles of geologic formations with medium paleontological significance and 37 with low significance would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.

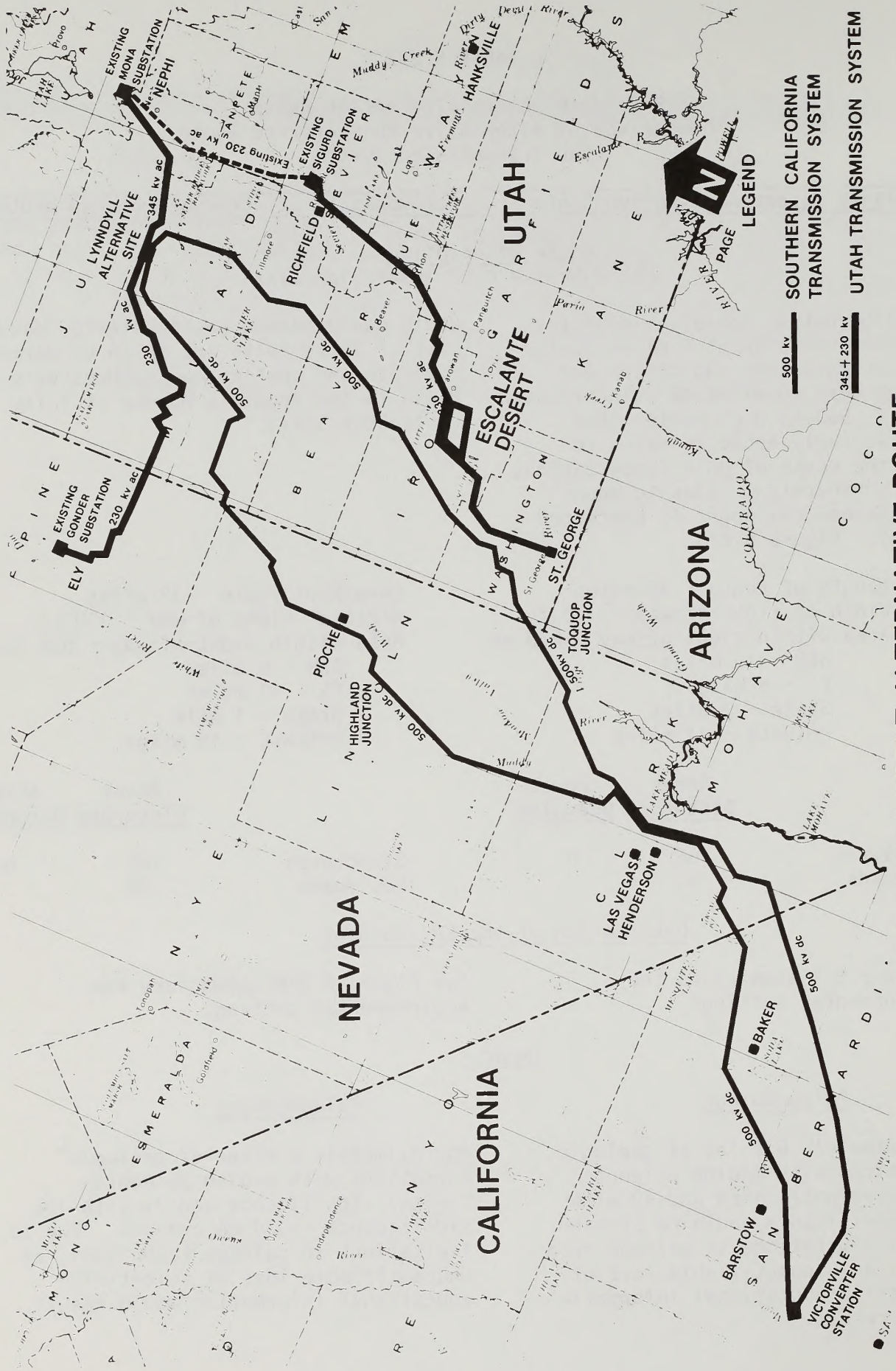

ESCALANTE DESERT ALTERNATIVE ROUTE
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
UTAH TRANSMISSION SYSTEM
500 kv
345+230 kv
EXISTING MONA SUBSTATION
NEPHI
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
RICHFIELD
HANKSVILLE
LYNNDYLL ALTERNATIVE SITE
345 kv ac
230 kv ac
500 kv dc
EXISTING GONDER SUBSTATION
ELY
PIOCHE
HIGHLAND JUNCTION
TOQUOP JUNCTION
ST. GEORGE
ESCALANTE DESERT
PAGE
LAS VEGAS HENDERSON
BAKER
BARSTOW
VICTORVILLE CONVERTER STATION
UTAH
ARIZONA
NEVADA
CALIFORNIA

FIGURE 8.8 -3

ENVIRONMENTAL PROFILE
ESCALANTE DESERT ROUTE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- , Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

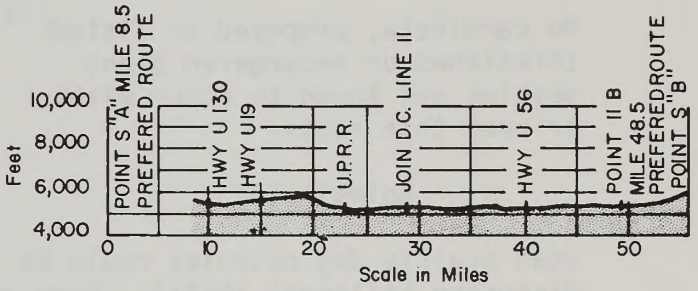
POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance



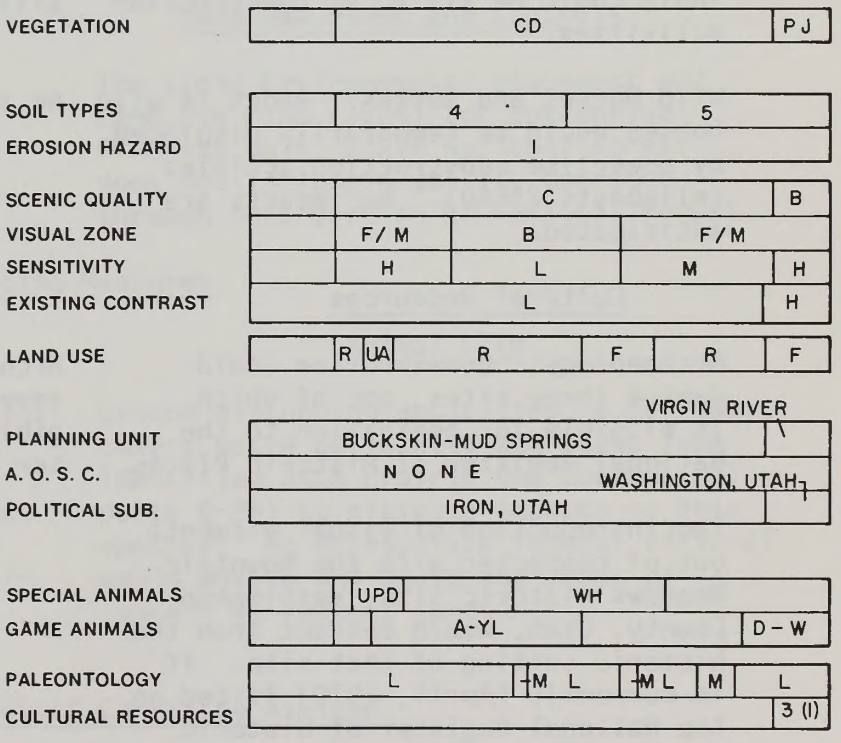


FIGURE 8.8 -4

TABLE 8.8-2 (continued)

Escalante Desert Alternative Route	Paragonah to St. George Proposed Route
Soils	**Soils**
No issue identified.	Route would cross 39 miles of moderate or high erosion hazard soils. Some accelerated erosion could occur. No impacts on other resources would be expected. Revegetation without seeding could take 10 to 15 years.
Vegetation	**Vegetation**
No candidate, proposed or listed threatened or endangered plant species are known to occur within or near this route.	No candidate, proposed or listed threatened or endangered plant species are known to occur within or near this route.
Animal Life	**Animal Life**
Utah prairie dog colonies could be disturbed (milepost 16-21). Some animals could be killed by construction activities.	Utah priarie dog colonies would be disturbed (mileposts 0-26). Some animals could be killed by construction activities.
Wild Horses and Burros: About 14 wild horses would be temporarily displaced by powerline construction activies (mileposts 25-40). No impacts are anticipated.	No issue identified.
Cultural Resources	**Cultural Resources**
Archaeology: Construction could damage three sites, one of which is eligible for nomination to the National Register of Historic Places.	Archaeology: Construction could damage seventy-seven sites, one of which is eligible for nomination to the National Register of Historic Places.
The introduction of visual elements out of character with the Mountain Meadows Historic Site, Washington County, Utah, would detract from the historic setting of that site. It is currently (April, 1979) listed on the National Register of Historic Places.	
Recreation and Aesthetics	**Recreation and Aesthetics**
A transmission line would cross one highway and would have the following visual impacts:	A transmission line would cross three highways and would have the following visual impacts:

TABLE 8.8-2 (continued)

Escalante Desert Alternative Route			Paragonah to St. George Proposed Route		
Highway Crossing	ADT	Contrast Rating	Highway Crossing	ADT	Contrast Rating
U-130	250	High	U-130	250	High
			U-380	290	High
			U-56	650	Low
The transmission line would be visible (medium contrast) from a housing subdivision within Cedar Valley (milepost 7-15).			The transmission line would be a visual intrusion (high contrast) from housing subdivisions in Cedar Valley (mileposts 12-17).		
Powerline would also extend into northern portions of Mountain Meadow, a sensitive area (mileposts 47-52) and parallel existing powerline for 11 miles. Additional intrusion would have little effect on aesthetic values.					
Land Use Plans and Controls			Land Use Plans and Controls		
No issue identified.			The final Environmental Statement and Land Use Plan (1974) for Enterprise Planning Unit, Dixie National Forest does not include a utility corridor through this portion of National Forest.		
Mitigating Measures					
Animal Life			Animal Life		
Ground disturbing construction activities, e.g. roads, towers, would be located 200 yards from identified. Utah prairie dog burrows (mileposts 16-21) to mitigate impacts on this species. An appropriate federal official would advise and designate areas of concern on federal lands.			Ground disturbing activities, e.g. roads, towers would be located 200 yards from identified Utah prairie dog burrows (mileposts 0-26) to mitigate impacts on this species. An appropriate federal official would advise and designate areas of concern on federal lands.		
Adverse Impacts Which Cannot be Avoided					
Paleontology			Paleontology		
Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.			Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.		

TABLE 8.8-2 (concluded)

Escalante Desert Alternative Route	Paragonah to St. George Proposed Route
Soils	**Soils**
No issue identified.	Some accelerated erosion on 113 acres would occur along 39 miles of moderate to high erosion hazard soils. Amounts of soil loss cannot be quantified.
Animal Life	**Animal Life**
Some impacts to Utah prairie dog could not be avoided on 24 miles of private lands (about 57 acres). It is not likely that the continued existence of any threatened or endangered species would be jeopardized by construction or maintenance of powerlines.	Some impacts to Utah prairie dog could not be avoided on 19 miles of private land (about 45 acres). It is not likely that the continued existence of any threatened and endangered species would be jeopardized by construction and maintenance of powerlines.
Cultural Resources	**Cultural Resources**
Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.	Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.
Recreation and Aesthetics	**Recreation and Aesthetics**
Transmission lines would cross two highways and would be visible to travelers in 250 vehicles daily. Contrast rating is high.	Three highway crossings would be visible (low-high contrast) to travelers in 1,190 vehicles daily.
Visual intrusions (medium contrast) could be created by construction of powerlines through this region of Cedar Valley (mileposts 7-15).	A visual intrusion (high contrast) would be created by the construction of powerlines through Cedar Valley (mileposts 12-15).
Powerlines would cross portions of Mountain Meadow, a sensitive area, milepost 47-52. Additional contrast would be low and aesthetic values would be reduced a little.	
Land Use Plans and Controls	**Land Use Plans and Controls**
No issue identified.	The transmission route would conflict with the Enterprise Land Use Plan on the Dixie National Forest.

TABLE 8.8-3

Connors Pass Alternative Route
Comparison of Alternative to Preferred Route
Utah Transmission System

Connors Pass Alternative Route	Lynndyl to Gonder Proposed Route
Route Description	
One 230-kV a.c. Transmission Line	
Powerline would leave the route near Oceola, Nevada (milepost 110) and extend southwesterly, then west through Conners Pass, finally northerly to join the preferred route at milepost 130. Figure 8.8-5.	Route would be contiguous to existing 230 kV transmission right-of-way and would pass through Cooper Canyon (mileposts 110-130), Figure 8.2-E.
Length of route - 25 miles Width of right-of-way - 110 ft. Area within right-of-way - 333 ac. BLM - 13 miles FS - 9 miles State - 0 miles Private - 3 miles	Length of route - 20 miles Width of right-of-way - 110 ft. Area within right-of-way - 267 ac. BLM - 8 miles FS - 9 miles State - 0 miles Private - 3 miles

	Acres Disturbed	Acres Occupied
Structures	90	4
New roads	42	

	Acres Disturbed	Acres Occupied
Structures	14	3
New roads	None	

Description of the Environment	
Figure 8.8-6 summarizes the environmental setting.	See Figure 8.2-E for a description of the environment.
Impacts	
Paleontology	**Paleontology**
Approximately 1 mile of geologic formations with potentially high paleontological significance, 9 miles with medium paleontological significance, and 15 with low would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.	Approximately 1 mile of of geologic formations with potentially high paleontological significance, 9 miles with medium paleontological significance, and 10 miles with low would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.

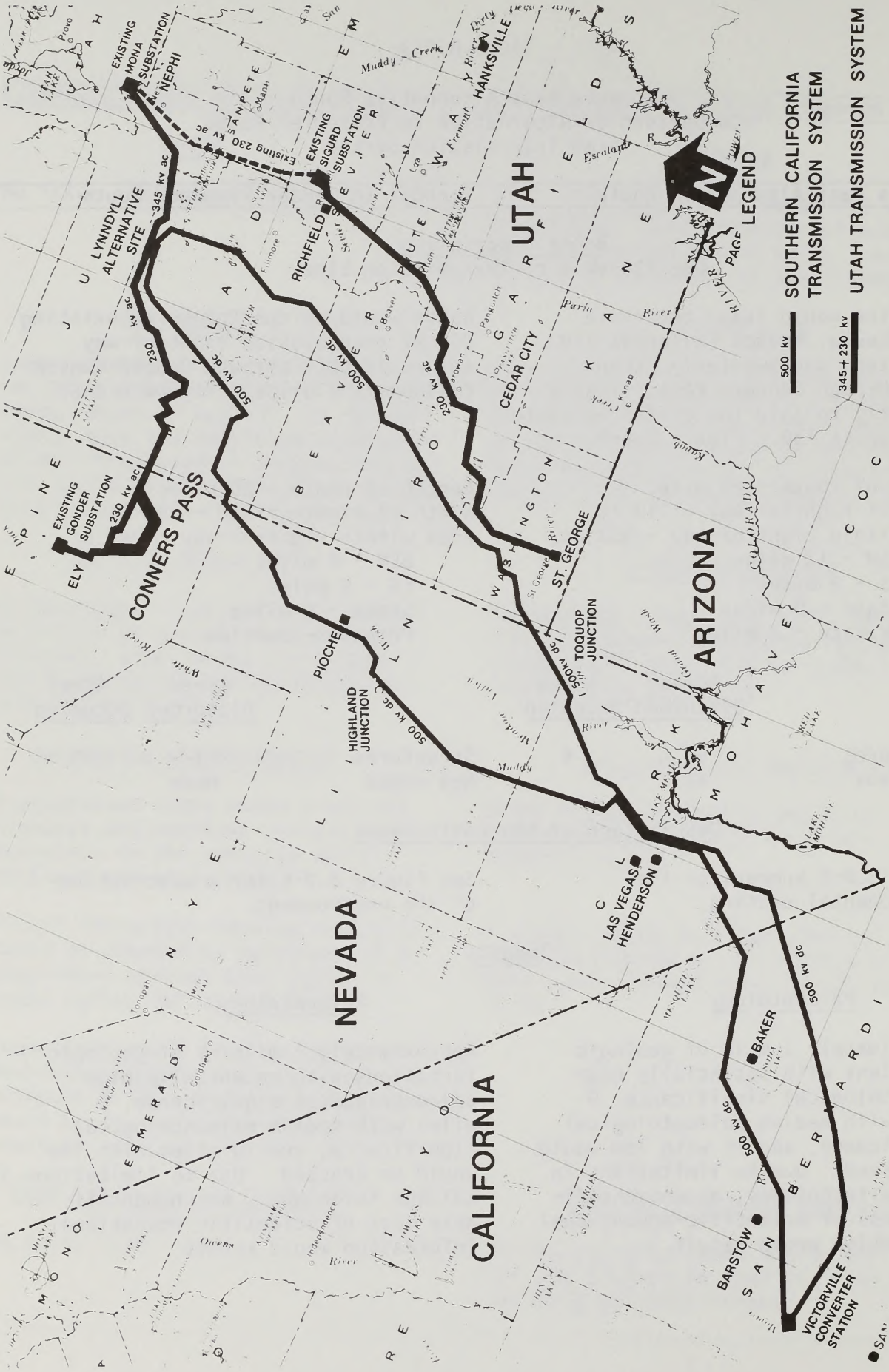

CONNERS PASS ALTERNATIVE ROUTE
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
UTAH TRANSMISSION SYSTEM
500 kv
345+230 kv
EXISTING MONA SUBSTATION
NEPHI
LYNNDYLL ALTERNATIVE SITE
345 kv ac
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
RICHFIELD
HANKSVILLE
CEDAR CITY
ST. GEORGE
EXISTING GONDER SUBSTATION
230 kv ac
ELY
CONNERS PASS
PIOCHE
HIGHLAND JUNCTION
TOQUOP JUNCTION
LAS VEGAS
HENDERSON
BAKER
BARSTOW
VICTORVILLE CONVERTER STATION
500 kv dc
230 kv dc
UTAH
NEVADA
ARIZONA
CALIFORNIA

FIGURE 8.8 -5

ENVIRONMENTAL PROFILE
CONNOR'S PASS ROUTE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

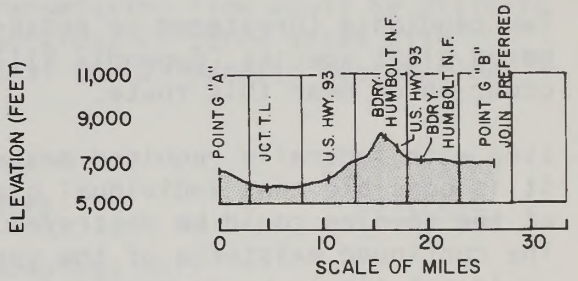
POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance



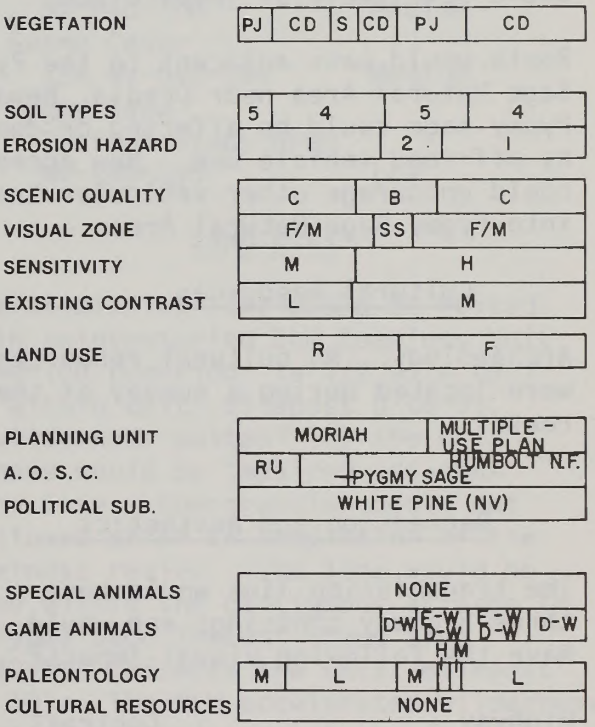


FIGURE 8.8 -6

TABLE 8.8-3 (continued)

Connors Pass Alternative Route	Lynndyl to Gonder Proposed Route
Soils	**Soils**
Route would cross 5 miles of high erosion hazard soils. Erosion would be localized on disturbed areas and no impacts on other resources are expected.	Route would cross 8 miles of high erosion hazard soils. Erosion would be be localized on disturbed areas and no impacts on other resources are expected.
Vegetation	**Vegetation**
Two candidate threatened or endangered plant species (Appendix VIII.8-3) occur on or near this route. Even with federally required measures, it is possible that individual plants of the species could be destroyed. The continued existence of the species would not likely be jeopardized.	No candidate proposed or listed threatened or endangered plant species are known to occur within or near this route.
Route would pass adjacent to the Pygmy Sage Natural Area near Oceola, Nevada. Pygmy sage could be affected or damaged by off-road vehicle use. New access could encourage other vehicular travel into Pygmy Sage Natural Area.	No issue identified.
Cultural Resources	**Cultural Resources**
Archaeology: No cultural resources were located during a survey of the route.	Archaeology: Construction could damage four sites, one of which is eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	**Recreation and Aesthetics**
The transmission line would have three highway crossings and would have the following visual impacts:	The transmission line would cross one highway and would have the following visual impacts:

Highway Crossing	ADT	Contrast Rating
US 6 & 50	385	High
US 6 & 50	450	Low
US 6 & 50	450	Low

Highway Crossing	ADT	Contrast Rating
US 6 & 50	385	Low

TABLE 8.8-3 (continued)

Connors Pass Alternative Route	Lynndyl to Gonder Proposed Route
This alternative route would parallel an existing distribution powerline through sensitive Conners Canyon. Additional contrast would be low-medium. Aesthetic values would be somewhat reduced. The powerline would be visible from the Pygmy Sage Natural Area (high contrast).	The transmission line would be visible (low contrast) from the Swamp Cedar Natural Area and Bat Guano Cave.
The transmission line would be visible from portions of three areas with potential for wilderness designation:	The transmission line would be visibile from portions of three areas with potential for wilderness designation:

Area	Anticipated Contrast
Roadless Unit NV-040-100	Medium
Wheeler Peak RARE II 4-359	Low
Pygmy Sage Instant Study Area NV-040-099	Low to High

Area	Anticipated Contrast
Roadless Unit NV-040-100	Medium
Swamp Cedar ISA NV-040-089	Medium
Pygmy Sage Instant Study Area NV-040-099	Low

Land Uses

The transmission line would be routed within uninventoried BLM Roadless Unit NV-040-100 (route is 110 feet inside the roadless area, milepost 108-109). Any wilderness suitability the unit may have would be impaired within powerline route. Construction could not be allowed prior to completion of wilderness review.

Land Uses

The transmission line would be routed within uninventoried BLM Roadless Unit NV-040-100 (corridor is 1/2 mile to 1 mile within unit, milepost 0 to 5), any wilderness suitability the unit may have would be impaired adjacent to the line. Construction could not be allowed prior to completion of the wilderness review. The line would be routed within the contiguous acreage to the Pygmy Sage Instant Study Area NV-040-099 (bisects the unit, milepost 5 to 10). The BLM accelerated wilderness inventory determined that the instant study area and its contiguous acreage lack wilderness character, but the transmission line could not be constructed through the area prior to congressional decision on BLM's recommendation that it is not suitable for wilderness designation.

TABLE 8.8-3 (continued)

Connors Pass Alternative Route	Lynndyl to Gonder Proposed Route
Mitigating Measures	
Recreation and Aesthetics	Recreation and Aesthetics
Use helicopters to erect towers and string conductors in areas designated by the appropriate federal official, where access across the terrain or management constraints preclude standard construction methods. The transmission line would be maintained and repaired using the same techniques as were used in original construction.	Use helicopters to erect towers and string conductors in areas designated by the appropriate federal official where access across terrain or management constraints preclude standard construction methods. The transmission line would be maintained and repaired using the same techniques as were used in original construction.
Adverse Impacts Which Cannot Be Avoided	
Paleontology	Paleontology
Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.	Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.
Soils	Soils
Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).	Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).
Vegetation	Vegetation
Two plant species which are candidate for listing as threatened, or endangered occur within or near this route route (Appendix VIII.2-3). It is not likely that these species nor their critical habitat would be jeoparidized.	No candidate, proposed, or threatened or endangered species are known to occur without or near this route.
Cultural Resources	Cultural Resources
Archaeology: No issue identified.	Archaeology: Even with full implementation of proposed mitigating measures, some loss would occur due to vandalism and construction activities.

TABLE 8.8-3 (concluded)

Connors Pass Alternative Route	Lynndyl to Gonder Proposed Route
Recreation and Aesthetics	Recreation and Aesthetics
Three transmission highway crossings would be visible (low to high contrast) to motorists in 1,285 vehicles daily. The line would cross visually sensitive Connors Canyon. Additional contrast would be low to medium, and aesthetic values would be somewhat reduced. The line would be visible (high contrast) from portions of one recreation attraction. The line would be visible (low to high contrast) from portions of three areas with potential for wilderness designation.	One highway crossing would be visible (low contrast) travelers in 385 vehicles daily. Powerlines would be visible (low contrast) from the Swamp Cedar Natural Area and Bat Guano Cave. Powerlines would also be visible (low-medium contrast) from portions of three areas with potential for wilderness designation.

TABLE 8.8-4

Baking Powder Flat Alternative
Comparison of Alternative to Preferred Route
Southern Califonia Transmission System

Baking Powder Flat Alternative	Lynndyl to Highland Junction Proposed Route
Route Description	
Line 1 (One 500-kV d.c. Transmission Line)	
Alternative would leave proposed route (Line 1) at milepost 24 and extend southwest and than west, paralleling the existing Sigurd-Gonder 230-kV powerline to a point near Oceola, Nevada (milepost 110). It would then turn southward crossing Baking Powder Flat, Lake Valley and extending southwesterly over a low mountain pass into eastern Muleshoe Valley and continuing southward to Dry Lake Junction (milepost 208). Figure 8.8-7.	The route would extend to the southwest, west of Sevier Lake, across the northern end of Hamlin Valley (Nevada), into Lake Valley, then turning southward and west of Pioche, Nevada to the Highland Junction (milepost 177) to join a common route identified with Salt Wash Site proposal.
Length of route - 184 miles Width of right-of-way - 200 feet Area within right-of-way - 4,460 ac. BLM - 174 miles USFS - 0 miles State - 9 miles Private - 1 mile	Length of route - 177 miles (terminating at Dry Lake Junction) Width of right-of-way - 200 feet Area within right-of-way - 4,290 ac. BLM - 165 miles USFS - 0 miles State - 9 miles Private - 3 miles
Acres Disturbed / Acres Occupied	Acres Disturbed / Acres Occupied
Structures 662 / 29 New roads 128 (75 miles)	Structures 637 / 28 New roads 200 (118 miles)
Description of the Environment	
Figure 8.8-8 shows the environmental setting.	See Figure 8.2-B for the proposal's environmental setting.
Impacts	
Paleontology	**Paleontology**
Approximately 33 miles of geologic formations with medium paleontological significance and 67 miles with low would be crossed. Due to limitations in salvage tech-	Approximately 6 miles of geologic formations with potentially high paleontological significance, 10 with medium paleontologial significance, and 137 with low would be crossed. Due to

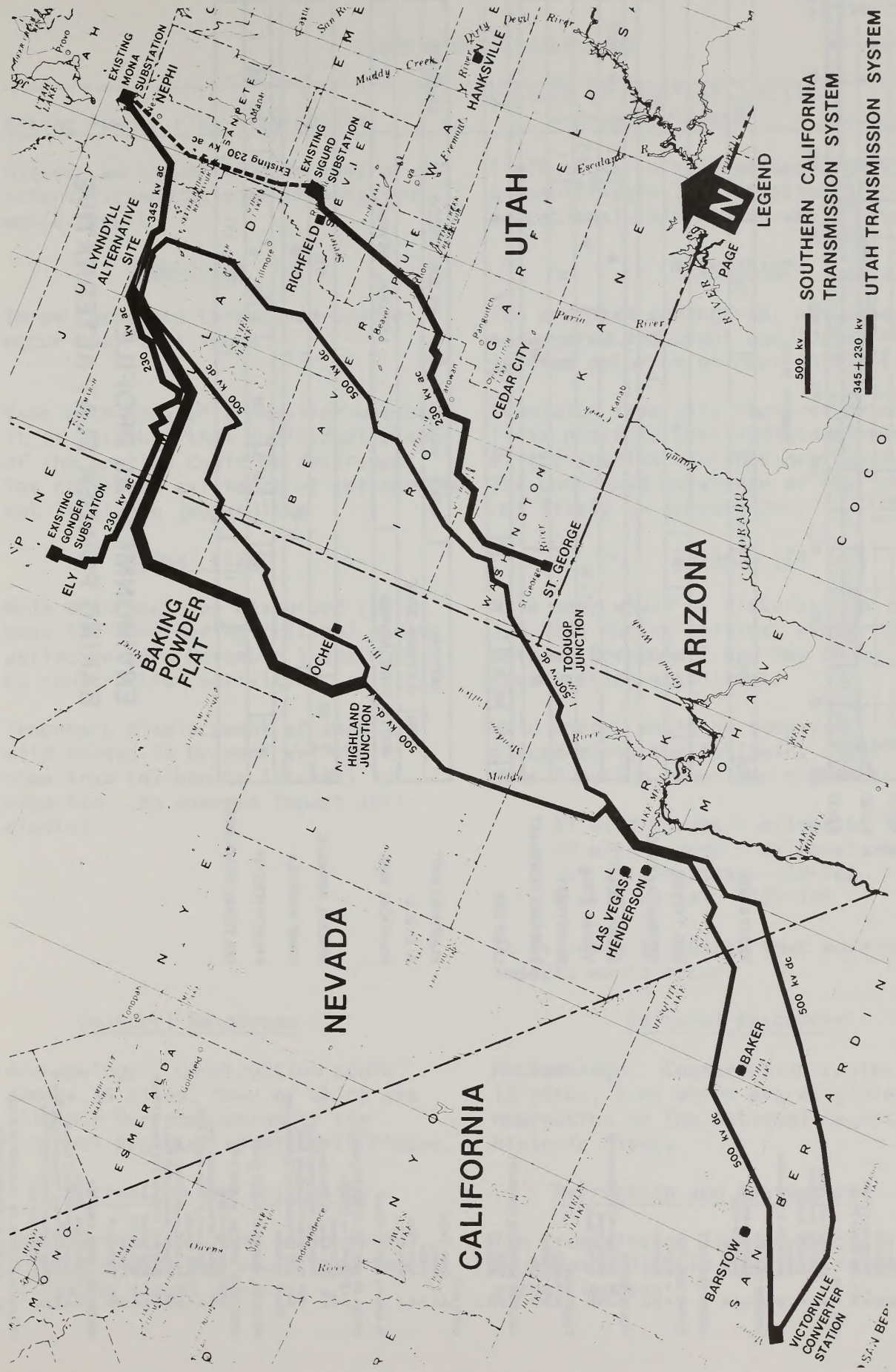

BAKING POWDER FLAT ALTERNATIVE ROUTE
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
UTAH TRANSMISSION SYSTEM
500 kv
345+230 kv
N
EXISTING MONA SUBSTATION
NEPHI
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
HANKSVILLE
LYNNDYLL ALTERNATIVE SITE
345 kv ac
230 kv ac
500 kv dc
RICHFIELD
CEDAR CITY
PAGE
EXISTING GONDER SUBSTATION 230 kv ac
ELY
BAKING POWDER FLAT
OCHE
HIGHLAND JUNCTION
500 kv dc
TOQUOP JUNCTION
ST GEORGE
LAS VEGAS HENDERSON
BAKER
BARSTOW
VICTORVILLE CONVERTER STATION
UTAH
NEVADA
ARIZONA
CALIFORNIA

FIGURE 8.8 -7

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
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LAND USE
- R- Open Range
- F- Forest
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- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

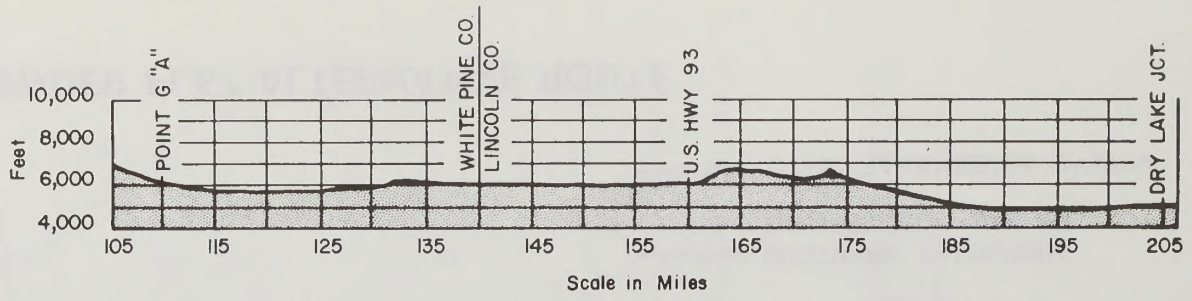
POLITICAL SUBDIVISIONS BY NAME

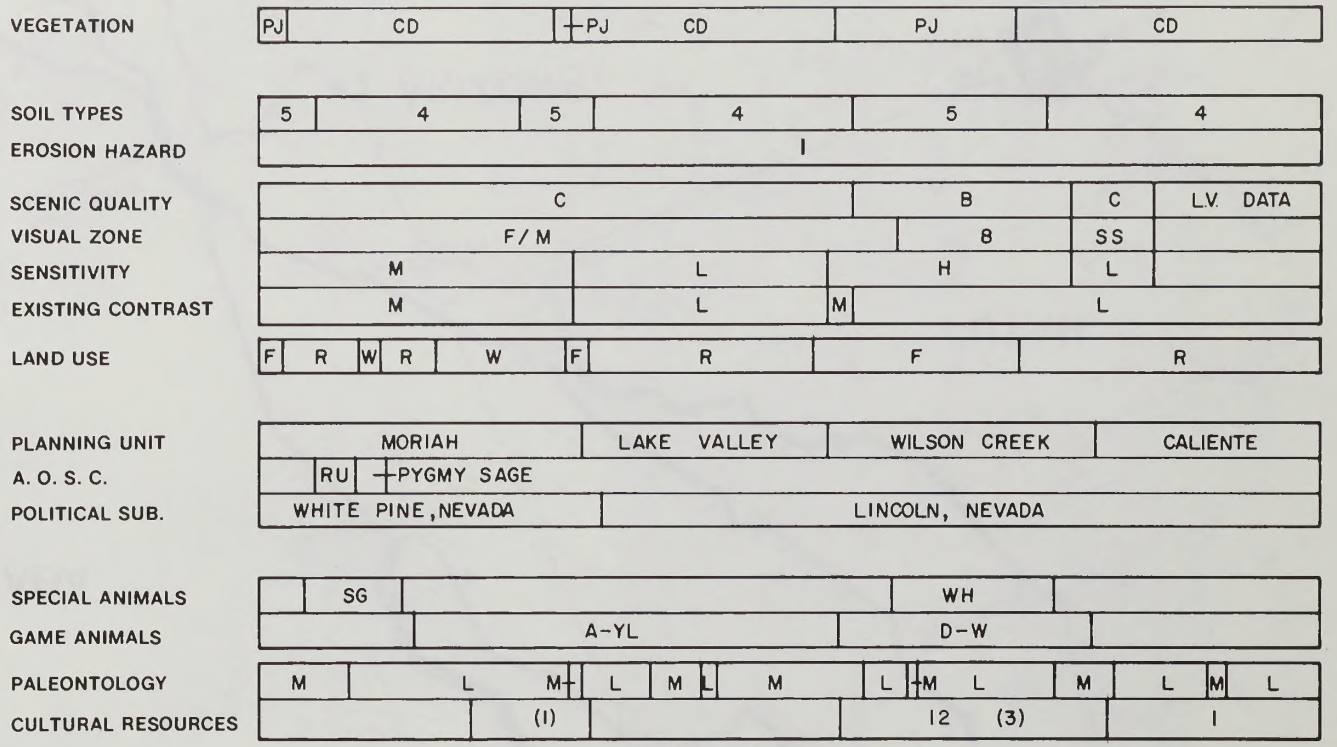
HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance





ENVIRONMENTAL PROFILE: BAKING POWDER FLAT ALTERNATIVE

FIGURE 8.8 -8

TABLE 8.8-4 (continued)

Baking Powder Flat Alternative	Lynndyl to Highland Junction Proposed Route
niques, an unquantifiable loss of scientific-educational information would result.	limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.
Vegetation	Vegetation
Three candidate threatened species occur near this route.	Two proposed endangered, one candidate endangered and eight candidate threatened species occur on or near this route.
Even with federally required measures it is possible that individual plants of the species could be destroyed. The continued existence of the species not likely be jeopardized.	Even with federally required measures it is possible that individual plants of the species could be destroyed. The continued existence of the species not likely be jeopardized.
Animal Life	Animal Life
Mule deer would be disturbed (milepost 160-190) during critical winter period between November 1 and May by construction activities.	Mule deer would be disturbed (milepost 126-128) during critical winter period between November 1 and May 30 by construction activities.
Temporary displacement of about 25 wild horses in Bristol Well-Muleshoe Area (mileposts 165-180) is expected. No adverse impact anticipated.	Wild horses would be temporarily displaced along the following segments of Line 1 during powerline construction: 43 wild horses - mileposts 70-90 12 wild horses - mileposts 90-105 115 wild horses - 110-160 6 wild horses - 165-185 It is not anticipated that adverse impacts would occur.
Cultural Resources	Cultural Resources
Archaeology: Construction could damage 14 sites, four of which are eligible for nomination to the National Register of Historic Places.	Archaeology: Construction could damage 13 sites, 5 of which are eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	Recreation and Aesthetics
The transmission line would cross three highways and would have the following visual impacts:	The transmission line would cross three highways and would have the following visual impacts:

TABLE 8.8-4 (continued)

Baking Powder Flat Alternative			Lynndyl to Highland Junction Proposed Route		
Highway Crossing	ADT	Contrast Rating	Highway Crossing	ADT	Contrast Rating
272	150	High	U-6 & 50	325	High
U-6 & 50	285	Medium	U-257	85	High
US 93	460	High	US 93	460	Medium

The combination of proposed metal towers (average height 136 feet) with existing wooden power poles would create high visual contrast. The proposed powerline is routed through two unusally sensitive areas, Marjum Pass (mileposts 45-50) and northwest of Baker, Nevada (milepost 100-110). Aesthetic values would be somewhat Reduced, although the areas have already been disturbed.

The line would parallel two highways; U.S. 6 & 50 (milepost 85-100), visible (medium contrast) to travelers in 140 vehicles daily, and U.S. 93 (milespost 120-165), visible (low to high contrast) to motorists in a total of 460 vehicles daily.

The transmission line would be visible from nine recreation attraction areas having special values.

Area	Contrast Rating
Notch Peak	Medium
Wheeler Peak Scenic Area	Medium
Weaver Creek Scenic Area	High
Shoshone Pygmy Sage Natural Areas	High
Shoshone Ponds Natural Area	Medium
North Creek Scenic Area	Low
Mt. Grafton Scenic Area	Low
Fortification Range	Low
Highland Range	Low

This power transmission line would intrude upon open space values associated with undeveloped lands (mileposts 55-130). It would also be visible from two recreation attraction areas as follows:

Recreation Area	Contrast Rating
Fossil Mountain	High
Crystal Peak	Low

Recreational values may be reduced for some visitors.

TABLE 8.8-4 (continued)

Baking Powder Flat Alternative	Lynndyl to Highland Junction Proposed Route
Recreational values may be reduced for some visitors.	
The line would be visibile from portions of eight areas with potential for wilderness designation as follows:	The line would be visible from portions of two areas with potential for wilderness designation as follows:

Area	Anticipated Contrast
Mt. Moriah	
RARE II 4-332	Low
Wheeler Peak	
RARE II 4-359	Medium
Howell Peak	
WSA UT-050-007	High
Notch Peak	
WSA UT-050-078	Medium
Roadless Unit	
NV-040-100	High
Pygmy Sage	
ISA NV-040-099	High
Fortification Range	
WSA NV-040-177	Medium
Shoshone Pones	
ISA NV-040-900	Low

Area	Anticipated Contrast
King Top	
WSA UT-050-070	High
Fortification Range	
WSA NV-040-177	Low

Land Uses	Land Uses
Wilderness: The transmission line would be routed within uninventoried BLM roadless unit NV-040-100 (corridor is 110 feet to 1 mile within the unit, milepost 106 to 114) and any wilderness suitability the unit may have would be impaired adjacent to the line. Construction could not be allowed prior to completion of the wilderness review. The line would be routed within the contiguous acreage to the Pygmy Sage Instant Study Area NV-040-900 (corridor is 200 feet to 1 mile within unit, milepost 114 to 118). Although the BLM accelerated wilderness inventory determined that the ISA and its contiguous acreage lack wilderness character, the powerline could not	Wilderness: The transmission lines would be routed within King Top WSA UT-050-070, (1/2 mile within area, milepost 71 to 75) wilderness character (i.e., naturalness) and wilderness suitability would be impaired adjacent to the line. Any impairment of wilderness suitability would not be allowed prior to completion of BLM's wilderness review and congressional decision on the area.

TABLE 8.8-4 (continued)

Baking Powder Flat Alternative	Lynndyl to Highland Junction Proposed Route
be constructed through the area prior to congressional decision on BLM's recommendation that the area is not suitable for wilderness designation.	
Mitigating Measures	
Animal Life	**Animal Life**
During critical periods, impacts to mule deer (milepost 160-190) November 1-May 30 from construction activities would be mitigated by ceasing construction during this period.	Impacts to mule deer during critical period November 1 to May 30 by construction activities would be mitigated by ceasing construction during this period (milepost 126-128).
Recreation and Aesthetics	**Recreation and Aesthetics**
Use helicopters to erect towers and string conductors, in areas designated by the appropriate federal official, where access across the terrain or management constraints preclude standard construction methods. The applicant would prepare photographic simulations of areas in which facilities are proposed within foreground-middleground areas of high scenic values or high sensitivity. Using the simulation as a guide, the applicant would design and locate structures to blend into the existing environment. Affected government agencies would evaluate and approve measures before construction is begun.	No mitigation identified.
Adverse Impacts Which Cannot Be Avoided	
Paleontology	**Paleontology**
Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational informations would occur.	Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational informations would occur.

TABLE 8.8-4 (concluded)

Baking Powder Flat Alternative	Lynndyl to Highland Junction Proposed Route
Vegetation	Vegetation
Three plant species which are candidata for listing as threatened or endangered occur on or near this route (Appendix VIII.2-3). Even with federally required mitigating measures, it is possible that individual plants of these species could be inadvertantly destroyed. It is not likely that the continued existence of these species or critical habitat would be jeopardized.	Two proposed, one candidate endangered, and eight candidate threatened species occur on or near this route. Even with federally required measures, it is possible that some individual plants of these species could be inadvertantly destroyed by construction activities. It is not likely that their continued existence or critical habitat would be jeopardized.
Cultural Resources	Cultural Resources
Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction.	Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.
Recreation and Aesthetics	Recreation and Aesthetics
Three transmission line highway crossings would be visible (medium to high contrast) to motorists in a total of 895 vehicles daily. The powerline would cross two visually sensitive areas; Margin Pass (mileposts 45-50) and the Wheeler Peak foothills (milepost 100-110). Additional contrast would be medium and aesthetic values would be reduced. The lines would parallel two highways; U.S. 6 & 50 (milepost 85-100) and U.S. 93 (milepost 120-165) visible (low to high contrast) to motorists in a total of 600 vehicles daily. The lines would be visible (low to high contrast) from portions of eight recreation attractions or areas of high scenic quality. Recreational values may be reduced to some visitors. The line would be visible (low to high contrast) from portions of eight areas with potential for wilderness designation.	Three highway crossings would be visible (medium to high contrast) to motorists in a total of 870 vehicles daily. Open space values of undeveloped lands would be lost (milepost 55-130). The lines would be visible (low to high contrast) from portions of two recreation attractions or areas of high scenic quality. Recreational values may be reduced for some visitors. The lines would be visible (low to high contrast) from portions of two areas with potential for wilderness designation.

TABLE 8.8-5

Lake Valley-Pioche-Dry Lake Junction Route
Southern California Transmission System

Lake Valley-Pioche-Dry Lake Junction Alternative Route	Baking Powder Flat Alternative
Route Description	
Line 1--One 500-kV Transmission Line	
Beginning at milepost 161 on the Baking Powder Flat alternative line 1 and then extending southeasterly across Lake Valley to a point (milepost 150) on the Lynndyl to Highland Junction preferred transmission line 1, then southerly following this preferred route about 44 miles to Dry Lake Junction. Figure 8.8-9.	Beginning at milepost 161 on Baking Powder Flat alternative transmission route 1 and extending southwesterly into eastern Muleshoe Valley, then southerly to Dry Lake Junction (milepost 208).
Length of route - 54 miles Width of right-of-way - 200 feet Area within right-of-way - 1,310 ac.	Length of route - 47 miles Width of right-of-way - 200 feet Area within right-of-way - 1,125 ac.
BLM - 53 miles USFS - 0 miles State - 0 miles Private - 1 mile	BLM - 47 miles USFS - 0 miles State - 0 miles Private - 0 mile
Structures: Acres Disturbed 195; Acres Occupied 9 New roads (54 miles): Acres Disturbed 92	Structures: Acres Disturbed 170; Acres Occupied 7 New roads (25 miles): Acres Disturbed 43
Description of the Evironment	
Figure 8.8-10 summarizes the environmental setting.	Figure 8.8-4 summarizes the environmental setting.
Impacts	
Paleontology	**Paleontology**
Approximately 53 miles of geologic formations with low significance would be crossed. Due to limitations in salvage technique, an unquantifiable loss of scientific-educational information would result.	Approximately 11 miles of geologic formations with medium paleontologic significance and 36 with low would be crossed. Due to limitations in salvage technique, an unquantifiable loss of scientific-educational information would result.

FIGURE 8.8 -9

LAKE VALLEY—PIOCHE—DRY LAKE ALTERNATIVE ROUTE

ENVIRONMENTAL PROFILE: LAKE VALLEY-PIOCHE-DRY LAKE JUNCTION ALTERNATIVE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- , Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

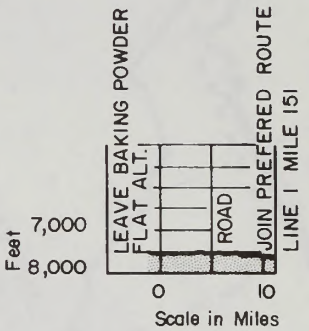
POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance



VEGETATION	CD
SOIL TYPES	4
EROSION HAZARD	I
SCENIC QUALITY	C
VISUAL ZONE	F / M
SENSITIVITY	L
EXISTING CONTRAST	M
LAND USE	R
PLANNING UNIT	WISON CR.
A. O. S. C.	
POLITICAL SUB.	LINCOLN NEVADA
SPECIAL ANIMALS	N O N E
GAME ANIMALS	A
PALEONTOLOGY	L
CULTURAL RESOURCES	NONE

FIGURE 8.8 -10

TABLE 8.8-5 (continued)

Lake Valley-Pioche-Dry Lake Junction Alternative Route	Baking Powder Flat Alternative
Vegetation	**Vegetation**
One candidate threatened species grows along this route (see Appendix VIII.2-3). Even with federally required measures, it is possible that individual plants of the species could be destroyed. The continued existence of the species would not likely be jeopardized.	No candidate, proposed or officially listed threatened or endangered species are known to occur within or near the route (Appendix VIII.2-3).
Animal Life	**Animal life**
No issue identified.	Mule deer could be disturbed during critical winter period of November to May. Construction of powerlines would cause harassment and temporary displacement.
No Issue Identified.	Temporary displacement of about 25 wild horses in Bristol Wells-Muleshoe area (mileposts 165-180) is expected.
Cultural Resources	**Cultural Resources**
Archaeology: Construction could destroy twelve sites; none are eligible for nomination to the National Register of Historic Places.	Archaeology: Construction could damage seven sites, three of which are eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	**Recreation and Aesthetics**
One highway crossing by transmission line would have the following visual impacts:	One highway crossing by transmission line would have the following visual impacts:
Highway Crossing: US 93 — ADT: 460 — Contrast Rating: High	Highway Crossing: US 93 — ADT: 460 — Contrast Rating: High
Power lines would be visible (low contrast) from the Highland Range.	Open space values on undeveloped lands would be lost along entire route.

TABLE 8.8-5 (concluded)

Lake Valley-Pioche-Dry Lake Alternative Route Junction Route	Baking Powder Flat Alternative
Mitigating Measures	
Animal Life	Animal Life
No mitigation identified.	The impacts to mule deer on winter range (milepost 165-190) would be mitigated on federal lands by ceasing construction when designated by the appropriate federal official during the period November 1 through May 30.
Adverse Impacts Which Cannot Be Avoided	
Paleontology	Paleontology
Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information.	Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information.
Vegetation	Vegetation
One candidate species occurs near Highland Junction, Nevada. Even with federally required measures it is possible that some individual plants of this species could be inadvertantly destroyed. It is not likely that the continued existence of this species or its critical habitat would be jeopardized.	No candidate, proposed or officially listed threatened or endangered species are known to occur within or near this route.
Cultural Resources	Cultural Resources
Archaeology: Even with full implementation of proposed mitigating measures some losses would occur due to vandalism and construction activities associated with powerlines.	Archaeology: Even with full implementation of mitigating measures, some losses would occur due to vandalism and construction activities associated with powerlines.
Recreation and Aesthetics	Recreation and Aesthetics
One highway crossing would be visible (high contrast) to motorists in 460 vehicles daily. The lines would be visible (low contrast) from one recreation attraction or area of high scenic quality.	One highway crossing would be visible (high contrast) to motorists in 460 vehicles daily. Open space values of undeveloped lands would be lost along the entire route.

TABLE 8.8-6

Black Rock Alternative Route
Comparison of Alternative to Preferred Route
Southern California Transmission System

Black Rock Alternative Route	Lynndyl to Toquop Proposed Route
Route Description **Line 2 One 500-kV Transmission Line**	
Route would extend westerly and parallel to the proposed Lynndyl to Gonder 230 kV transmission line and one 500 kV transmission line for 11 miles. It would turn south and, from milepost 44, extend nearly parallel to the Union Pacific Railroad and adjacent to Utah highway 257. The route would pass near Black Rock, rejoining the proposed route at milepost 85. Figure 8.8-11.	The preferred route would extend southeasterly from the Lynndyl alternative power generating station about 8 miles in a common power transmission corridor before leaving corridor and extending southward 26 miles, then run southwesterly to milepost 86.
Length of route - 85 miles Width of right-of-way - 200 ft. Area within right-of-way -2,015 ac. BLM - 66 miles USFS - 0 miles State - 9 miles Private - 10 miles	Length of route - 86 miles Width of right-of-way - 200 ft. Area within right-of-way - 2,085 ac. BLM - 71 miles USFS - 0 miles State - 7 miles Private - 8 miles
Structures: Acres Disturbed 306, Acres Occupied 14 New roads (70 miles): Acres Disturbed 119	Structures: Acres Disturbed 310, Acres Occupied 15 New roads (64 miles): Acres Disturbed 109
Description of the Environment	
Figure 8.8-12 summarizes the environmental setting.	Figure 8.2-C summarizes the environmental setting.
Impacts	
Paleontology	**Paleontology**
Approximately 27 miles of geologic formations with potentially medium paleontological significance and 58 with low significance would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.	Approximately 33 miles of geologic formations with potentially medium paleontological significance and 54 with low significance would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.

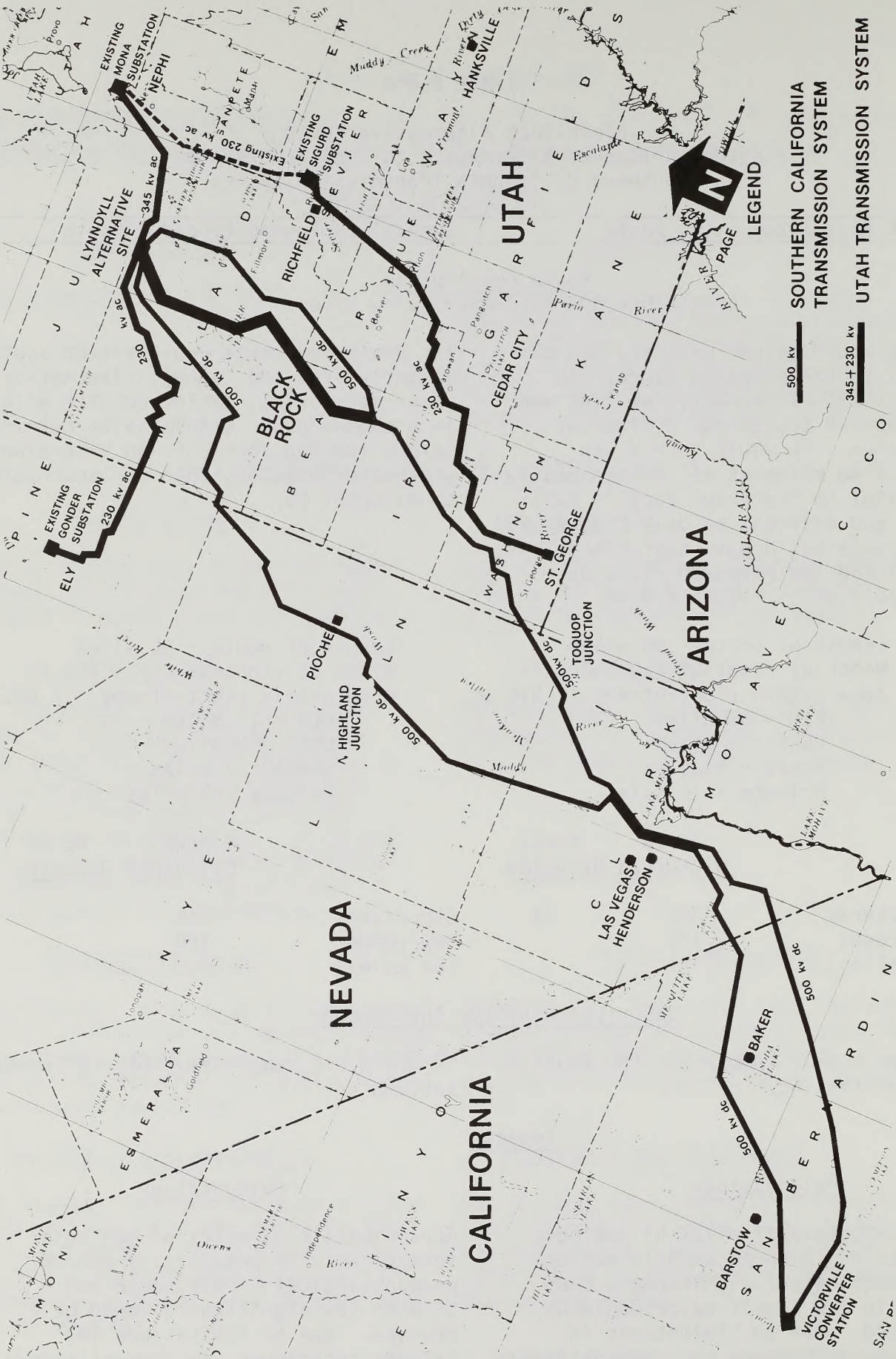

BLACK ROCK ALTERNATIVE ROUTE
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
500 kv
UTAH TRANSMISSION SYSTEM
345+230 kv
UTAH
NEVADA
ARIZONA
CALIFORNIA
EXISTING MONA SUBSTATION
NEPHI
LYNNDYLL ALTERNATIVE SITE
345 kv ac
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
RICHFIELD
HANKSVILLE
PAGE
CEDAR CITY
BLACK ROCK
500 kv dc
230 kv ac
EXISTING GONDER SUBSTATION
ELY
PIOCHE
HIGHLAND JUNCTION
TOQUOP JUNCTION
ST. GEORGE
LAS VEGAS
HENDERSON
BAKER
BARSTOW
VICTORVILLE CONVERTER STATION

FIGURE 8.8 -11

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

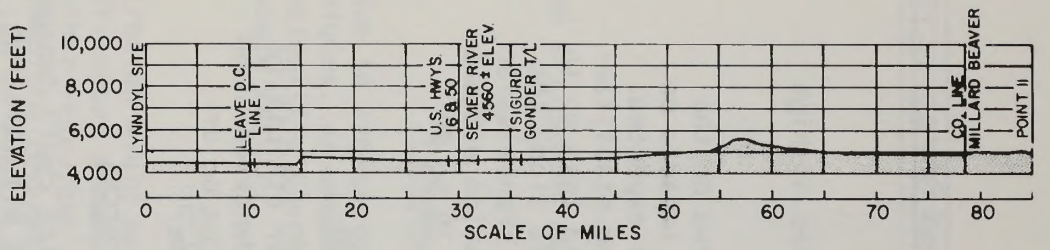
POLITICAL SUBDIVISIONS BY NAME

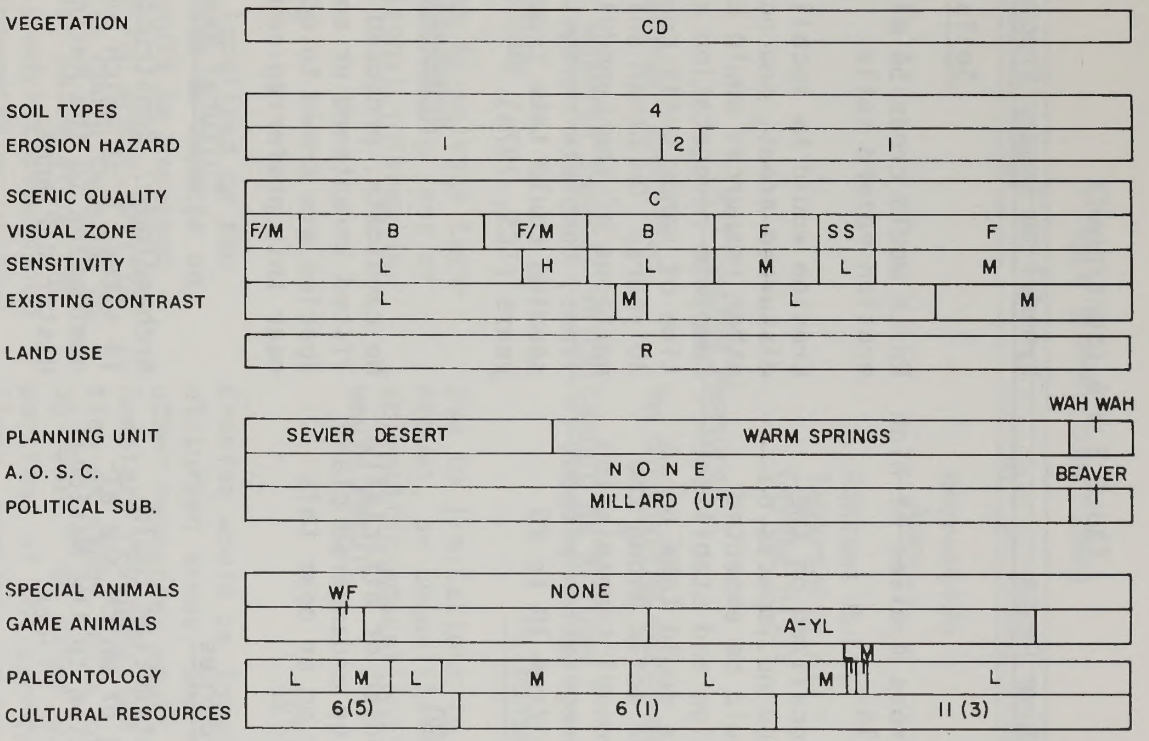
HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-tooted Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance





ENVIRONMENTAL PROFILE
BLACK ROCK ROUTE

FIGURE 8.8 -12

TABLE 8.8-6 (continued)

Black Rock Alternative Route	Lynndyl to Toquop Proposed Route
Soils	**Soils**
This route would cross 4 miles of high erosion hazard soils.	Route would cross 54 miles of high erosion hazard soils.
Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).	Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).
Vegetation	**Vegetation**
No candidate, proposed or officially listed threatened or endangered plant are known to occur on or near this route.	No candidate, proposed or officially listed threatened or endangered plant species are known to occur on or near this preferred route.
Cultural Resources	**Cultural Resources**
Archaeology: Construction could damage 12 sites, 3 of which are eligible for nomination to the National Register of Historic Places.	Archaeology: Construction could damage 14 sites, 5 of which are eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	**Recreation and Aesthetics**
The transmission line would cross one highway and would have the following visual impacts:	The transmission line would cross four highways and would have the following visual impacts:
Highway Crossing: U.S. 50 — ADT: 325 — Anticipated Contrast: High	Highway Crossing / ADT / Anticipated Contrast: US 6 & 50 / 850 / High; U-125 / 210 / High; U-50 / 620 / High; U-257 / 140 / High
The powerline would approximately parallel highway U-257 (milepost 44-85) and would be visible (low to high contrast) to travelers in 140 vehicles daily.	The powerline would intrude upon open space values of undeveloped lands (milepost 25-80). Powerline would be visible from three recreation attractions as follows:

TABLE 8.8-6 (concluded)

Black Rock Alternative Route	Lynndyl to Toquop Proposed Route
	Recreation Area / Contrast Rating: Pahvant Butte — Low; Tabernacle Hill — Low; Coyote Hills — High
Mitigating Measures	
No mitigating measures identified.	No mitigating measures identified.
Adverse Impacts Which Cannot Be Avoided	
Paleontology	**Paleontology**
Due to limitations in salvage techniques, an unqualitifiable loss of scientific-educational information would result.	Due to limitations in salvage techniques, an unqualitifiable loss of scientific-educational information would result.
Soils	**Soils**
Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stibilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).	Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stibilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).
Cultural Resources	**Cultural Resources**
Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.	Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.
Recreation and Aesthetics	**Recreation and Aesthetics**
One transmission line highway crossing would be visible (high contrast) to travelers in 325 vehicles daily. Route would parallel highway U-257 (milepost 44-85) and would be visible (low-high contrast) to travelers in 140 vehicles daily.	Four transmission line highway crossings would be visible (high contrast) to travelers by 1,820 vehicles daily. Open space values of undeveloped lands would be lost (mileposts 25-80). Powerlines would visible (low-high contrast) from three recreation attractions or areas of high scenic quality.

TABLE 8.8-7

Lund Alternative Route
Comparison of Alternative to the Preferred Route
Southern California Transmission System

Lund Alternative Route	Lynndyl to Toquop Junction Proposed Route
Route Description	
Line 2 One 500-kV Transmission Line	
Route would leave preferred route at milepost 110 and extend southwesterly parallel and west of Union Pacific railroad to a point 3 miles southwest of Lund, Utah. Route would turn south and rejoin the preferred route at milepost 148. Figure 8.8-13.	Route would extend southerly from milepost 110 crossing a portion of Escalante Desert to milepost 128 and then southwesterly to milepost 148 west of Antelope Range.
Length of route - 38 miles Width of right-of-way - 200 feet Area within right-of-way - 920 ac. BLM - 15 miles State - 5 miles Private - 18 miles	Length of route - 38 miles Width of right-of-way - 200 feet Area within right-of-way - 920 ac. BLM - 18 miles State - 2 miles Private - 18 miles
Structures: Acres Disturbed 137, Acres Occupied 7 New roads (32 miles): Acres Disturbed 55	Structures: Acres Disturbed 137, Acres Occupied 7 New roads (8 miles): Acres Disturbed 14
Description of the Environment	
Figure 8.8-14 summarizes the environmental setting.	See Fgure 8.2-C for environmental setting.
Impacts	
Paleontology	**Paleontology**
Approximately 4 miles of geologic formations with medium paleontological significance and 34 with low significance would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.	Approximately 38 miles of geologic formations with low paleontological significance would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.

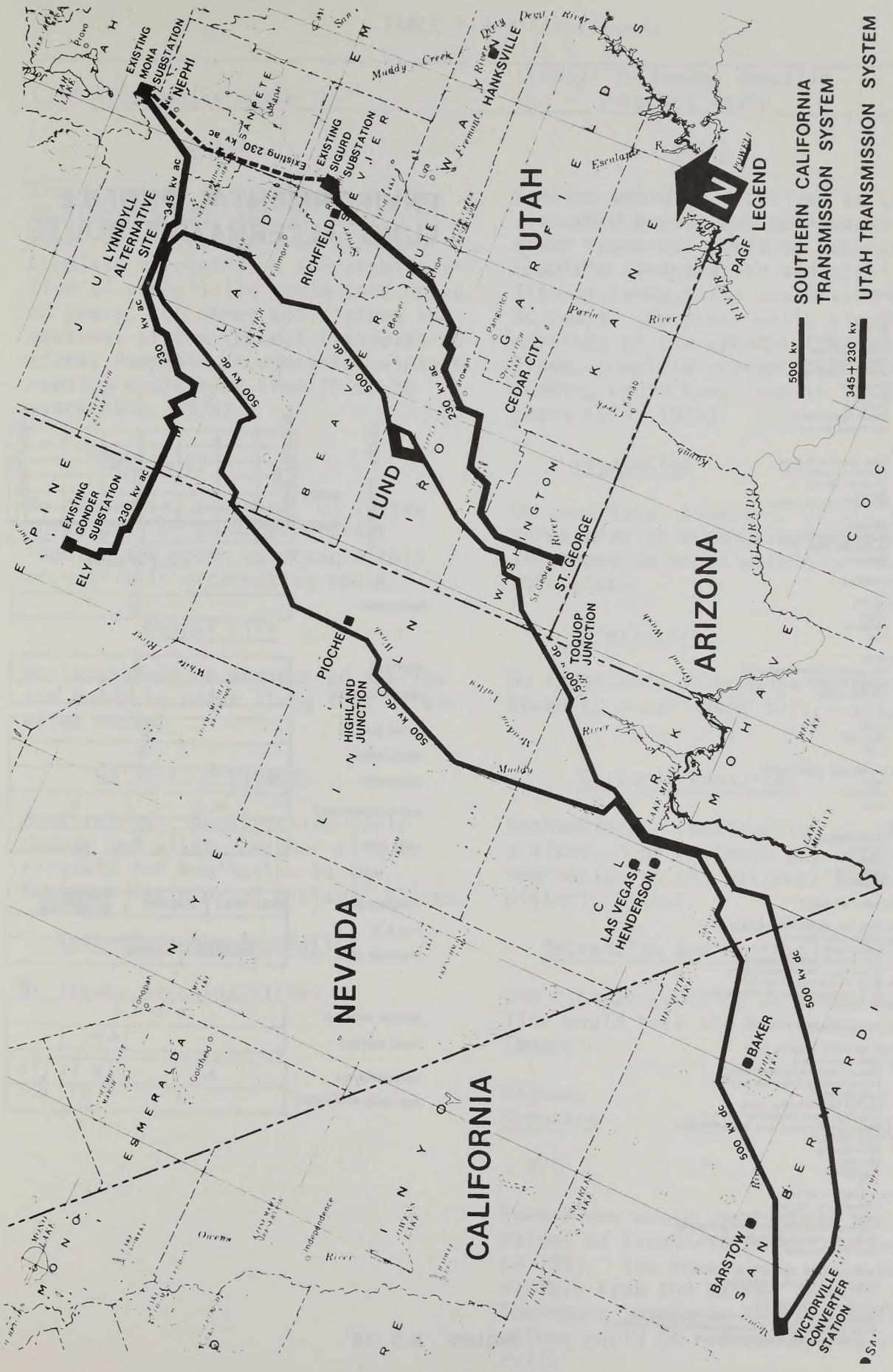

LUND ALTERNATIVE ROUTE
LEGEND
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
500 kv
UTAH TRANSMISSION SYSTEM
345+230 kv
EXISTING MONA SUBSTATION
NEPHI
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
HANKSVILLE
LYNNDYLL ALTERNATIVE SITE
345 kv ac
230 kv ac
500 kv dc
500 kv ac
RICHFIELD
CEDAR CITY
PARAGONAH
EXISTING GONDER SUBSTATION
230 kv ac
ELY
LUND
PIOCHE
HIGHLAND JUNCTION
TOQUOP JUNCTION
ST. GEORGE
LAS VEGAS
HENDERSON
BAKER
BARSTOW
VICTORVILLE CONVERTER STATION
UTAH
NEVADA
ARIZONA
CALIFORNIA

FIGURE 8.8 -13

ENVIRONMENTAL PROFILE
LUND ALTERNATIVE ROUTE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
- HD- , Hot Desert Shrub

SOIL TYPE
- 1- Deep Alluvial Valley
- 2- Shallow, Shale-Clay
- 3- Shallow, Rocky
- 4- Desert
- 5- Mountain and Foothills

EROSION HAZARD
- 1- Slight-Moderate
- 2- Moderate-High
- 3- Severe

VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
- H- High
- M- Medium
- L- Low

LAND USE
- R- Open Range
- F- Forest
- U- Urban
- A- Agriculture
- B- Barren

PLANNING UNIT BY NAME

AREAS OF SPECIAL CONCERN (AOSC)
- U-LD-Urban Low Density
- Ag- Agriculture
- R-II- U.S. Forest Service Rare II Wilderness Recommendation
- WSA-BLM Wilderness Study Area
- RA- BLM Uninventoried Roadless Area
- Others- By Name

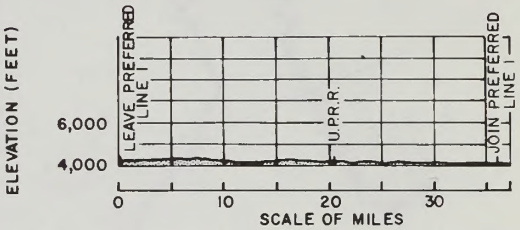
POLITICAL SUBDIVISIONS BY NAME

HABITAT OF SPECIAL ANIMAL LIFE
- UPD- Utah Prairie Dog
- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
- WH- Wild Horses
- WB- Wild Burros
- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
- PB- Potential Desert Bighorn Sheep Range
- S- Sage Grouse Concentration Area
- P- Pheasant Habatat

CULTURAL RESOURCES: NUMBER OF SITES
- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
- M- Potentially Medium Paleontological Significance
- L- Low Paleontological Significance



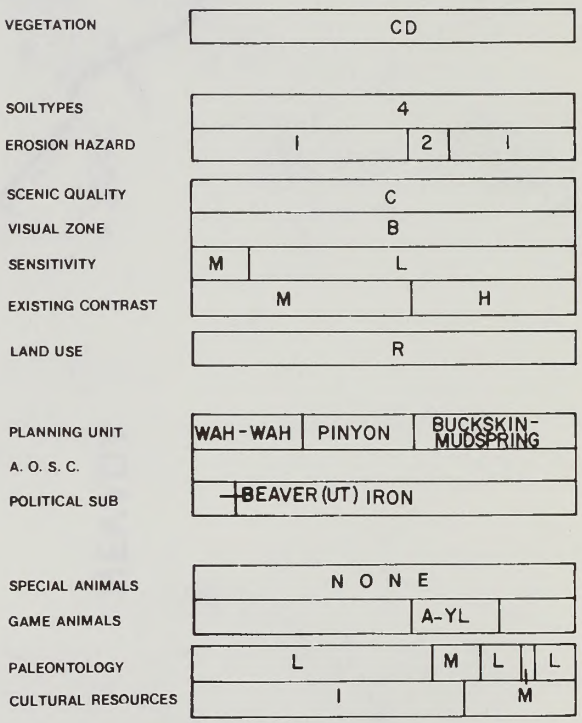


FIGURE 8.8 -14

TABLE 8.8-7 (continued)

Lund Alternative Route	Lynndyl to Toquop Junction Proposed Route
Soils	**Soils**
Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).	Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).
Vegetation	**Vegetation**
No candidate, proposed, or listed threatened or endangered plant species are known to occur within or near this alternative route.	No candidate, proposed, or listed threatened or endangered plant species are known to occur within or near this route.
Animal Life	**Animal Life**
No threatened or endangered species are known to occur along this alternative route.	No threatened or endangered species are known to occur along this route.
Cultural Resources	**Cultural Resources**
Archaeology: Construction could damage two sites, neither site is eligible for nomination to the National Register of Historic Places.	Archaeology: Construction could damage 3 sites, none of these are eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	**Recreation and Aesthetics**
No issues were identified.	One highway crossing by tranmission line would have the following visual impact: Highway Crossing: 377 — ADT: 170 — Contrast Rating: HIgh Powerlines would reduce open space values of Escalante Desert (milepost 118 to 138). The power line would be visible from the marked segment of the Dominguez-Escalante Trail. Recreational values would be reduced by 200 visitors daily.

TABLE 8.8-7 (concluded)

Lund Alternative Route	Lynndyl to Toquop Junction Proposed Route
Land Use Plans & Controls	Land Use Plans & Controls
A utility corridor (railroad, power transmission line) has been approved in the BLM Management Framework Plan (milepost 4-21). Continued use of corridor is encouraged.	Route has not been designated in BLM management framework plan.
Mitigating Measures	
No mitigating measures identified.	No mitigating measures identified.
Adverse Impacts Which Cannot Be Avoided	
Cultural Resources	Cultural Resources
Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.	Even with implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.
Recreation and Aesthetics	Recreation and Aesthetics
No impacts were identified.	The powerline would be visible (high contrast) from a marked segment of the Dominguez-Escalante Trail. One transmission line highway crossing would be visible to travelers in 170 vehicles daily. Powerlines would reduce open space values of Escalante Desert (milepost 118 to 138).
Land Use Plans and Controls	Land Use Plans and Controls
No issue identified.	Route has not been designated in BLM Management Framework Plan.

TABLE 8.8-8

Mountain Meadow Alternative Route
Comparison of Alternative to Preferred Route
Southern California Transmission System

Mountain Meadow Alternative Route	Lynndyl to Toquop Junction Proposed Route
Route Description	
Line 2--One 500-kV Transmission Line	
Route would leave the proposed route near the mouth of Meadow Valley Creek (milepost 159) and extends southward adjacent to an existing powerline for about 11 miles, then continuing southwesterly to rejoin preferred route at milepost 176. Figure 8.8-15	Route segment begins near the mouth of Meadow Valley Creek (milepost 159) and extends southwesterly to a point near Enterprise, Utah and then southerly west of Big Mountain (milepost 176).
Length of route - 17 miles Width of right-of-way - 200 feet Area within right-of-way - 412 ac. BLM - 1 mile USFS - 14 miles State - 1 mile Private - 1 mile	Length of route - 17 miles Width of right-of-way - 200 feet Area within right-of-way - 412 ac. BLM - 1 mile USFS - 14 miles State - 1 mile Private - 1 mile
Acres Disturbed / Acres Occupied	Acres Disturbed / Acres Occupied
Structures 62 / 3 New roads (6 miles) 10	Structures 62 / 3 New roads (17 miles) 29
Description of the Environment	
Figure 8.8-16 summarizes the environmental setting.	See Figure 8.2-C for the environmental setting.
Impacts	
Paleontology Approximately 10 miles of geologic formations with medium paleontological significance and 7 with low would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.	Paleontology Approximately 5 miles of geologic formations with medium paleontological significance and 12 with low would be crossed. Due to limitations in salvage techniques, an unquantifiable loss of scientific-educational information would result.

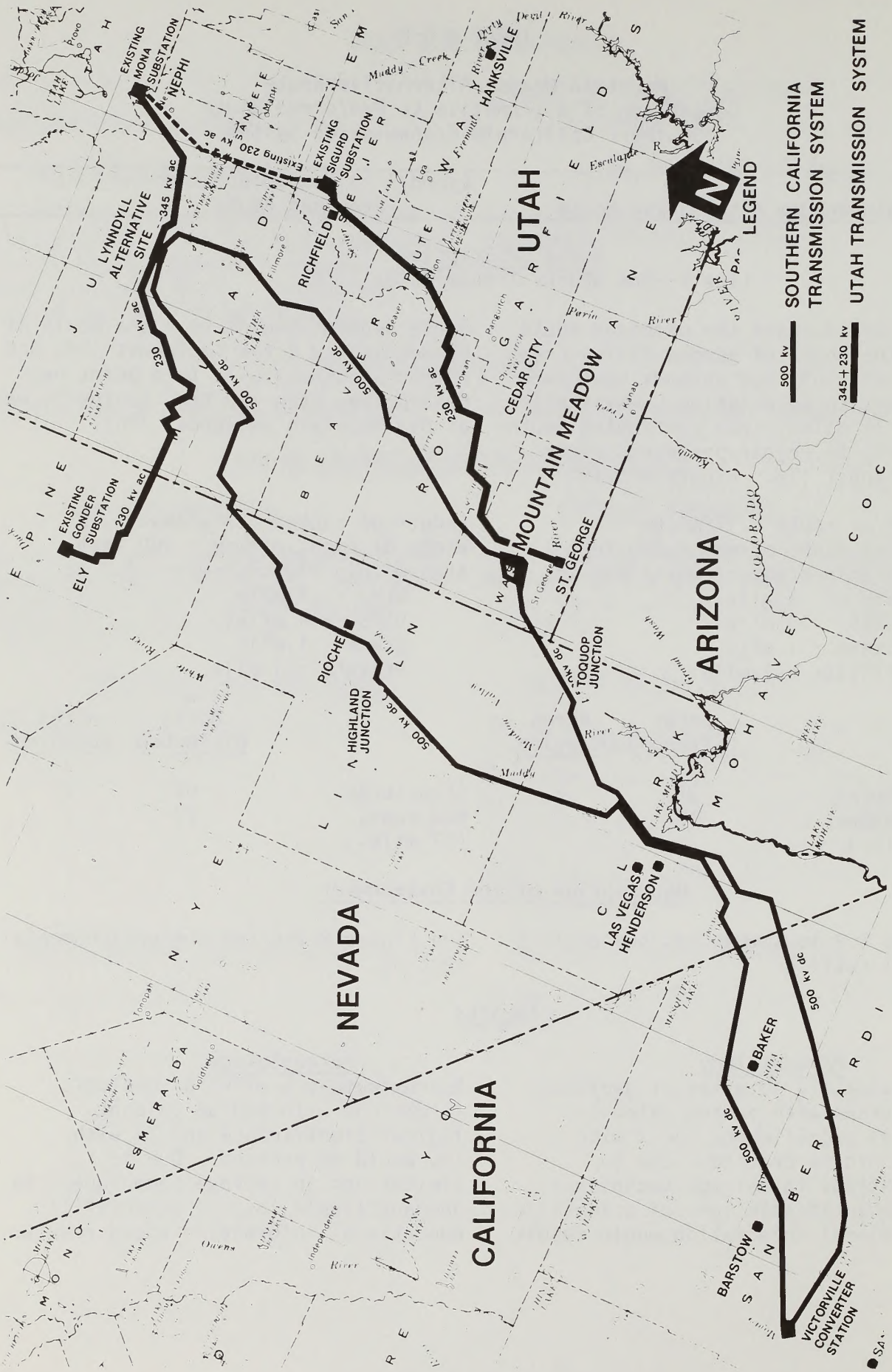

MOUNTAIN MEADOW ALTERNATIVE ROUTE
LEGEND
500 kv
SOUTHERN CALIFORNIA TRANSMISSION SYSTEM
345+230 kv
UTAH TRANSMISSION SYSTEM
UTAH
NEVADA
ARIZONA
CALIFORNIA
EXISTING MONA SUBSTATION
NEPHI
LYNNDYLL ALTERNATIVE SITE
345 kv ac
230 kv ac
EXISTING GONDER SUBSTATION
ELY
Existing 230 kv ac
EXISTING SIGURD SUBSTATION
SANPETE
SEVIER
DESERT
RICHFIELD
HANKSVILLE
Muddy Creek
CEDAR CITY
MOUNTAIN MEADOW
ST. GEORGE
500 kv dc
230 kv ac
TOQUOP JUNCTION
PIOCHE
HIGHLAND JUNCTION
LAS VEGAS
HENDERSON
BAKER
BARSTOW
VICTORVILLE CONVERTER STATION
SAN BERNARDINO
MOHAVE
COCONINO
ESMERALDA
NYE
LINCOLN
BEAVER
PARK
JUAB
MILLARD
GARFIELD
KANE
WASHINGTON

FIGURE 8.8 -15

ENVIRONMENTAL PROFILE
MOUNTAIN MEADOW ROUTE

LEGEND

VEGETATION
- F- Forest
- MB- Mountain Brush
- PJ- Pinyon Juniper
- CD- Cold Desert Shrub
- HD-J Joshua Tree Forest
- C- Chaparral
- B- Barren
- R- Riparian
- UA- Urban Agriculture
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VISUAL FEATURES

SCENIC QUALITY
- A- High
- B- Medium
- C- Low

VISUAL ZONES
- F/M- Foreground/Middleground
- B- Background
- SS- Seldom Seen

SENSITIVITY
- H- High
- M- Medium
- L- Low

EXISTING MANMADE CONTRAST
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PLANNING UNIT BY NAME

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- DT- Desert Tortoise Concentration
- F- Threatened or Endangered Fish
- G- Gila Monster
- R- Raptor Concentration Area
- BF- Potential Black-footed Ferret
- BT- Bendire's Thrasher and Gilded Flicker
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- U- Species
- WF- Water Fowl

IMPORTANT GAME HABITAT
- D- Critical Deer Range
- B- Desert Bighorn Sheep Range
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- P- Pheasant Habatat

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- ( ) Eligible for National Register

PALEONTOLOGICAL RESOURCES
- H- Potentially High Paleontological Significance
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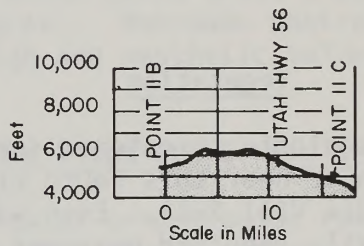

VEGETATION		PJ	CD	PJ
SOIL TYPES		5		
EROSION HAZARD		I		
SCENIC QUALITY		B		
VISUAL ZONE		F / M		
SENSITIVITY		H		
EXISTING CONTRAST		H		L
LAND USE		F	R	F
PLANNING UNIT		VIRGIN RIVER		
A. O. S. C.		N O N E		
POLITICAL SUB.		WASHINGTON, UT.		
SPECIAL ANIMALS		NONE		
GAME ANIMALS		D–W		
PALEONTOLOGY		M	L	M
CULTURAL RESOURCES		NONE		

FIGURE 8.8 -16

TABLE 8.8-8 (continued)

Mountain Meadow Alternative Route	Lynndyl to Toquop Junction Proposed Route
Soils	Soils
No issue identified.	Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stablization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).
Vegetation	Vegetation
Two candidate threatened species grow within or near this route (see Appendix VIII.2-3). Even with federally required measures, it is possible that individual plants of the species could be destroyed. The continued existence of the species would not likely be jeopardized.	Two candidate threatened species grow within or near this route (see Appendix VIII.2-3). Even with federally required measures, it is possible that individual plants of the species could be destroyed. The continued existence of the species would not likely be jeopardized.
Animal Life	Animal Life
No issue identified.	Mule deer could be impacted during critical fawning period (May 15-July 15) by powerline construction activities.
Cultural Resources	Cultural Resources
Archaeology: No sites were located within the transmission line route. The introduction of visual elements out of character with the Mountain Meadows Historic Site, Washington County, Utah, would detract from the historic setting of that site. It is currently (April, 1979) listed on the National Register of Historic Places.	Archaeology: Construction could damage four sites, two of which are eligible for nomination to the National Register of Historic Places.
Recreation and Aesthetics	Recreation and Aesthetics
One highway crossing would have the following visual impacts:	One highway crossing would have the following visual impacts:

TABLE 8.8-8 (continued)

Mountain Meadow Alternative Route			Lynndyl to Toquop Junction Proposed Route		
Highway Crossing	ADT	Anticipated Contrast	Highway Crossing	ADT	Anticipated Contrast
U-18	355	low	U-18	355	Medium
The entire route would cross the visually sensitive Mountain Meadow area. An existing 138-kV powerline already provides an initial intrusion along the route. Additional contrast would vary between (low-high) and aesthetic value would be degraded.			Route would parallel highway U-18 for about 5 miles and would be visible from Enterprise, Utah with medium to high contrast rating. The entire route would cross a visually sensitive area . Man-made contrast would be high and aesthetic values would be lost.		
Land Use Plans and Controls			Land Use Plans and Controls		
The land use plan for Enterprise Planning Unit, Dixie National Forest, designates a utility corridor which would be utilized for 11 miles, the remainder of this alternate route (6 miles) would be in conflict with Enterprise Land Use Plan.			This 14 miles of transmission route on the Dixie National Forest would be in conflict with the Enterprise Land Use Plan.		
Mitigating Measures					
Animal Life			Animal Life		
No issue identified.			The impacts on mule deer fawning on federal lands (milepost 159-167) would be mitigated by ceasing construction of powerlines when designated by the appropriate federal official during period May 15-July 15.		
Recreation and Aesthetics			Recreation and Aesthetics		
Mitigating measures 2.d, e, and f would mitigate aesthetic impacts.			Mitigating measures 2.d, e, and f would mitigate aesthetic impacts.		
Adverse Impacts Which Cannot Be Avoided					
Paleontology			Paleontology		
Due to limitations in slavage techniques, an unquantifiable loss in scientific and educational information would be lost.			Due to limitations in salvage techniques, an unquantifiable loss in scientific and educational information would be lost.		

TABLE 8.8-8 (concluded)

Mountain Meadow Alternative Route	Lynndyl to Toquop Junction Proposed Route
Soils	Soils
No issue identified.	Erosion would be localized on the disturbed areas, and no impacts on other resources would be expected. Complete revegetation and stabilization of sandy soils could take up to 30 years. On other soils along the portions of the Lynndyl transmission lines, complete revegetation without seeding could take from 10 to 20 years (SCS, 1978).
Cultural Resources	Cultural Resources
Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.	Archaeology: Even with full implementation of proposed mitigating measures, some losses would occur due to vandalism and construction activities.
Recreation and Aesthetics	Recreation and Aesthetics
One transmission line highway crossing (low contrast) would be visible to travelers in 355 vehicles daily. The route would cross through visually sensitive area, from low to high. Aesthetic values would be degraded.	One highway crossing would be visible (medium contrast) to motorists in 355 vehicles daily. The route would parallel and be visible (medium contrast) from U-18 for about 5 miles and would be visible (medium contrast) from Enterprise, Utah. The entire route would cross a visually sensitive area, man-made contrast would be high, and aesthetic values would be lost.
Land Use Plans and Controls	Land Use Plans and Controls
The Dixie National Forest Enterprise Land Use Plan currently designates a utility corridor which would be utilized for 11 miles. The remainder of the alternate route (6 miles) would be in conflict wth the Enterprise Land Use Plan.	The 14 miles of transmission route within Dixie National Forest would be in conflict with the Enterprise Land Use Plan.

TABLE 8.8-9

King Top Wilderness Study Area Alternative
Comparison of Alternative to Preferred Route
Southern California Transmission System

King Top Wilderness Study Area Alternative	Lynndyl to Highland Junction Proposed Route
Route Description	
Line 2--One 500-kV Transmission Line	
The alternative would be to cross the Snake Pass road at milepost 70. and proceed to milepost 75 on the south side of the road.	The proposed Lynndyl to Highland Junction Segment would cross 1/2 mile within proposed WSA UT-050-070 (milepost 71-75).
Impacts	
Aesthetics	Aesthetics
The transmission line would be visible (medium contrast) from one recreation attraction (Fossil Mountain) and from portions of one are with potential for wilderness designation (King Top WSA UT-050-070).	The transmission line would be visible (high contrast) from one recreation attraction (Fossil Mountain and from portions of one area with potential for wilderness designation (King Top WSA UT-050-070).
Land Use	Land Use
No issues identified.	Wilderness character (i.e. naturalness) and wilderness suitability would be impaired adjacent to the line and the action could not be allowed prior to congressional decision.

TABLE 8.8-10

Roadless Unit NV-040-100 Alternative
Comparison of Alternative to Preferred Route
Southern California Transmission System

Roadless Unit NV-040-100 Alternative	Lynndyl to Gonder Proposed Route
Route Description One 230-kV Transmission Line	
The alternative would be to cross the power line to the north side of the existing 230 kV line at milepost 105 paralleling and then re-crossing to the south of the existing 230 kV line at milepost 110.	The proposed Lynndyl to Gonder segment would cross 200 feet within uninventoried BLM roadless unit NV-040-100.
Aesthetics	**Aesthetics**
The line would be visible (low contrast) from portions of roadless unit NV-040-100.	The line would be visible (low contrast) from portions of roadless unit NV-040-100.
Land Uses	**Land Uses**
No issue identified.	Any wilderness character (i.e. naturalness) and wilderness suitability the unit may have would be impaired adjacent to the line, and the action could not be allowed prior to completion of the wilderness review, or prior to congressional decision if the area has wilderness character.

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